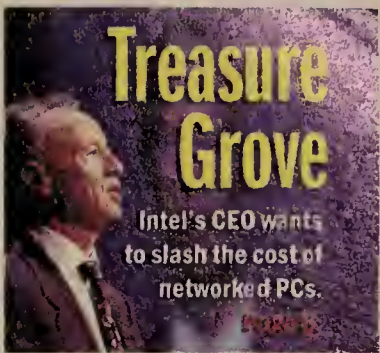


NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING



Microsoft offer to open ActiveX marred by intrigue

By Carol Sliwa and John Cox
New York
Some 100 invitees will converge here tomorrow to debate — and ultimately vote on — how they would like to see Microsoft Corp. transition its proprietary ActiveX

technologies into open standards.
But debate apparently will be limited. Microsoft will present attendees with a simple two-party choice for the standards body that gets its distributed object technology: The Open Group — a holding company for X/Open Company, Ltd. and Open Software Foundation, Inc. (OSF) — or a Microsoft-sponsored indus-

See ActiveX, page 68

ACTIVE X INDUSTRY MEETING

Oct. 1 in New York
Microsoft's mission: To promote and accelerate the adoption of ActiveX core technologies, including the Component Object Model and Distributed COM, on all commercial computing platforms.
Companies attending include: Borland, Cabletron, Corel, Digital, HP, Intel, Netscape, SAP, Software AG, Sybase and Wang.

Inexpensive Web slays Sprint Insite management tool

By David Rohde
Sprint Corp. has shelved an ambitious plan to give users a graphical look at the performance of data circuits inside the Sprint network.
Carrier officials last week confirmed they have dropped plans to offer Insite Executive, the Unix-based management suite for large users announced at the ComNet '96 show in January. It will also ditch the existing more limited Insite product that

See Insite, page 12

LLDS WorldCom gives users a Web-based view of carrier services. Page 8.

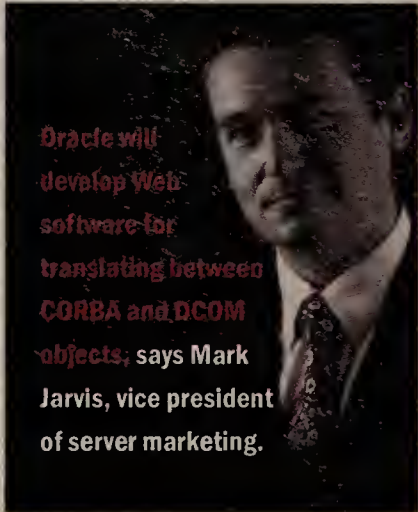
IBM goes to edge with net devices

Remote access devices, frame relay concentrator on tap.

By Michael Cooney
Raleigh, N.C.
IBM is getting edgy.
Addressing an area in which it has been notoriously weak, the company next week is expected to announce a collection of edge devices designed to feed traffic from remote sites across an ATM or frame relay backbone network.
IBM plans to introduce network access router/switches, a frame relay concentrator and

By Ellen Messmer, Carol Sliwa and John Cox
Redwood Shores, Calif.
Oracle Corp.'s Internet hype machine will be in full swing this week as the company discloses its Network Computing Architecture (NCA), an ambitious plan the company hopes will define the future of Internet-based computing.
The plan could make irrele-

vant the current bickering over rival object technologies for network applications between Microsoft Corp. and Netscape Communications Corp.
The architecture is, in fact, a scheme that defines how graphical user interface applications, application servers and databases work together through software components called cartridges and a messaging framework called the Intercartridge Exchange (ICX). ICX works as a lingua franca — a common medium that can be used by different network protocols and object technology.
Also part of the announcement will be details about Oracle's Universal Application Server. It initially will take the form of Oracle WebServer 3.0, which will support ICX and a



bunch of cartridges, including one for connecting Web requests to Oracle's relational database manager. Eventually, other Universal Application Servers will be released from Oracle and other vendors.
See Oracle, page 68

enhanced adapters, among other products, sources said.
These peripheral devices account for one of the three main components of IBM's Switched Virtual Network (SVN) architecture, the company's grand scheme for helping customers build and manage ATM networks based on its Nways switches. The other key compo-

See IBM, page 68

Read up on enterprise ATM with:

- An ATM primer
- An overview of frame relay in the enterprise
- A paper on the issues faced by the University of Pennsylvania in reengineering its WAN

Type the number above in the DocFinder box on the home page.

Network World Fusion
<http://www.nwfusion.com>

Haunted by its past, Sybase yearns for a brighter future

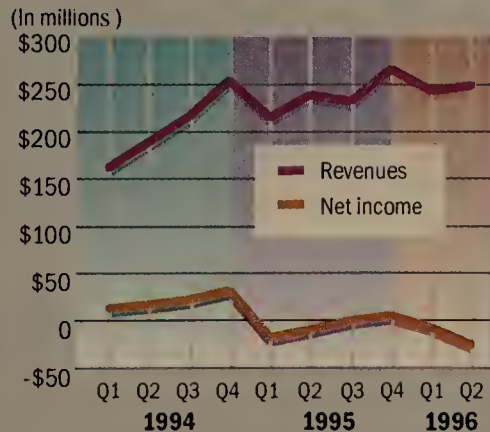
By John Cox
Emeryville, Calif.
Who would have imagined that less than two years after buying

client/server development tool leader Powersoft Corp., Sybase, Inc. would be relying on the acquired company's top two executives to right itself?
Certainly not Powersoft founder Mitchell Kertzman, now Sybase president and chief executive officer, or David Litwack, the Powersoft technical guru who earlier this month assumed command for all product development at the once high-flying



database company.
On the job for barely three months since taking over from Sybase cofounder Mark Hoffman, Kertzman and his team already have a new message
See Sybase, page 69

SYBASE'S FINANCIAL UPS AND DOWNS



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HOW WILL THE LAUNCH OF MID-RANGE COMPUTING? LET'S JUST

The Compaq ProLiant 5000 has arrived. And it's going to change everything that lies in its path. Including how you think about mid-range computing.

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transfer them to the Integration Server just one time. You can even maintain your network

when you're away from the office. All you need is your notebook and a phone line.

We've also partnered with the industry-leading companies of system management applications. So now you can view your entire network in one place. Together, these and other improvements have helped reshape the landscape of mid-range computing, by creating the most manageable server in the industry. To find out more about the ProLiant 5000, visit our Web site at www.compaq.com, or call us at 1-800-315-7772. It's not just a server. It's a force to be reckoned with.

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HP 9000 Model K420	4939.11	\$232
IBM RS/6000 J30	3631	\$289

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This Week



News+

NetFlash provides your recommended daily allowance of networking news. Look for fresh updates early each afternoon.

- **WAN management:** Read a white paper on the "management implications of public frame relay networks" and compare management offerings from Sprint and AT&T. **DocFinder: 9023.**
- **Industry watch:** Can Mitchell Kertzman turn Sybase around? Read the complete transcript of our interview with him. **DocFinder: 9020.**
- **Internet security, Part I:** Read dueling white papers from Netscape and Microsoft on their respective Internet commerce architectures and download Java-security FAQs. **DocFinder: 9022.**
- **Internet security, Part II:** See what steps the Computer Emergency Response Team and vendors are recommending to counter a new wave of massive attacks against Internet service providers. **DocFinder: 9017.**
- **Internet security, Part III:** As automakers prepare to exchange EDI and other data across the Internet, you can read up on the various public-key and security techniques they will be trying, from DES to X.509 servers. **DocFinder: 9007.**
- **Clustering/SMP:** Read articles on how a variety of vendors are stuffing more processors and power into their servers. **DocFinder: 9001.**

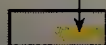


NetRef

Read our comparisons of four network operating systems and download everything from a Microsoft comparison of NT 3.51 with NT 4.0 to an in-depth interview with Novell's new president, Joe Marengi, on the future of NetWare and Novell. **DocFinder: 9015.**

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CONFERENCE PICK

Can Novell survive? Linda Musthaler says yes. What do you say?

Select Forum, Columnists then Musthaler.

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Special Section



THE NOS REPORT CARD

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News briefs, September 30, 1996

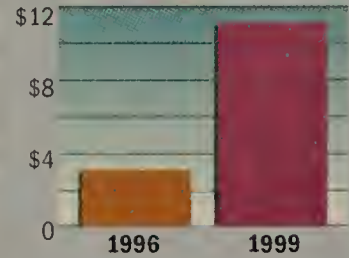
Cabletron snatches Netlink for \$160 million

■ Cabletron Systems, Inc. last week announced that it will acquire frame relay access provider Netlink, Inc. for about \$160 million in stock. The deal bolsters Cabletron's WAN/remote access product portfolio by providing Netlink's OmniLinux X.25 frame relay switching gear for the branch office, wiring closet/data center and central office. Earlier this year, Cabletron began focusing more on the WAN when it acquired ISDN modem maker Network Express, Inc. and partnered with Motorola, Inc. for Asymmetric Digital Subscriber Line technology.

Initially, Cabletron plans to sell Netlink's gear as stand-alone products but will later integrate frame relay into Cabletron's Multi Media Access Center-Plus.

WORLDWIDE FRAME RELAY MARKET

(In billions)



SOURCE: VERTICAL SYSTEMS GROUP, DEDHAM, MASS.

AT&T, Sun get ready to flex Geoplex

■ AT&T is developing an Internet and online transaction system with Sun Microsystems, Inc. called Geoplex, according to sources close to the company. Scheduled to be launched in 1997, Geoplex will offer corporations the ability to buy and sell goods securely over the Internet, sources said.

Encryption export debated

■ The House Judiciary Committee last week held a hearing to get both business and the Clinton administration's viewpoints on a pending bill called the Security and Freedom through Encryption Act that would lift export restrictions on strong cryptography. Representatives from Bear, Stearns & Company, Inc. and the National Association of Manufacturers urged passage of the bill. However, National Security Administration Deputy Director William Crowell and Department of Justice Deputy Attorney General Jamie Gorelick opposed the bill, saying the White House will soon unveil a key-escrow policy. With the 104th Congress soon to adjourn, action on the bill is not expected until early next year.

IBM launches OS/2 Warp 4

■ IBM last week began shipping OS/2 Warp 4, a new edition of its desktop operating system that features support for Java, OpenDoc and speech-recognition technology. IBM officials today touted Sun Microsystems, Inc.'s Java technology as the key element of the revised operating system. IBM has also struck a deal with Citrix Systems, Inc. to support Citrix's WinFrame/Enterprise multi-user application server software in an OS/2 environment. This will let users access 32-bit applications from a server on the network. The software costs \$249.

**Hacker attack**

■ Hackers recently wiped out about 27,000 messages from Internet newsgroups in a widespread hate attack. The attack was reportedly made with cancelbot programs, which automatically erased copies of messages from thousands of computers before being discovered. The attack, originating from users of Net services from UUNET Technologies, Inc., Netcom On-line Communications Services and Tulsa, Okla.-based Cottage Software, targeted messages in Usenet forums that cater to various minority groups. The offending Cottage Software customer has reportedly been identified and his service has been terminated. Legal experts have not determined whether the attack constitutes a crime.

Artisoft redirects itself

■ Artisoft, Inc., the Tucson, Ariz., maker of the LANtastic network operating system, last week said it has reorganized to focus more resources on the communications/computer telephony business. In doing so, the company will reduce expenses related to LANtastic. Among other things, it will lay off 50 workers.

Electronic messaging**Control Data tackles intranet messaging**

Company enhances its messaging switch and X.500 directory service products.

By Barb Cole

St. Paul, Minn.

Control Data Systems, Inc., a pillar of the E-mail directory and switching market, this week will announce a spate of products and services for building intranet-based messaging systems.

The company will enhance its flagship offerings with support for Internet protocols and roll out directory-based products to handle security and information sharing across intranet servers. The company plans to back up its software with consulting and integration services.

The products, new and old, will be packaged under the brand name Rialto and rolled out here this week at a customer and press briefing.

Some of the Rialto components, including a new piece called IntraStore Server, are directly aimed at Lotus Development Corp. Notes and Microsoft Corp. Exchange, acknowledged Jim Payne, marketing manager at Control Data.

IntraStore Server is an X.400 message store that can be accessed using Internet Messaging Access Protocol 4, Post Office Protocol 3 and X.400 clients. Unlike Notes and Exchange, however, the suite will offer customers a messaging store and switch, enterprise directory and graphical user interface management tools under one umbrella, Payne said.

Rialto's core is the company's X.500 Global Directory Server, which will be enhanced with a graphical administration tool and support for Lightweight Directory Access Protocol. The directory will now be able to chain to other LDAP-compliant servers, which means it can request directory information from other network servers.

A new offering, Rialto Security, is a set of services for defining corporate security policies that are tracked in the X.500 directory.

Two other new offerings, InfoEngine and IHub, are aimed

at giving customers Web access to corporate data stored in messaging systems, databases and business applications. InfoEngine utilizes the X.500 directory to store pointers or addresses that reveal the location of data in the enterprise. IHub lets users submit queries and returns HTML versions of the data to desktops running Web browsers.

Alto, Calif.

"The company realizes that the directory can be used for more things than tracking users through the organization," she said. Also on tap is an upgrade to the company's switch, which links disparate E-mail systems. The release, dubbed MailHub 97, has new gateways for Exchange and CE Software,

Now playing at the Rialto

Control Data's Rialto suite includes existing software as well as several new offerings.

Product	What's new	Availability
Global Directory Server	GUI tool for administration; support for LDAP	Q1 1997
MailHub 97	A new edition of the company's messaging switch that supports an X.400/Extended SMTP backbone, and includes gateways for Exchange and QuickMail	November
IntraStore Server	An X.400-based message store that has been enhanced with POP3 and IMAP4 support	November
Rialto Security	A set of services used to define security policies that are tracked in an X.500 directory	By year-end
InfoEngine and IHub	Software that leverages an X.500 directory to track information throughout the organization and deliver it to users via Web browsers	Q1 1997

"I've been preaching to [Control Data] for a long time, and they are starting to see the light," said Lee Croat, formerly director of academic computing at the University of Minnesota, which was the first site to use the company's MailHub messaging switch. "The X.500 directory can support many efforts, including handling the security on Internet transactions and linking data throughout the organization."

Analysts said Control Data's plan is well timed since more companies are looking to implement an enterprise directory.

"They have been too E-mail focused," said Sara Radicati, president of The Radicati Group, Inc., a consultancy and market research firm in Palo

Inc.'s Quickmail. In addition, customers can now run a dual X.400/Extended Simple Mail Transfer Protocol backbone using MailHub 97, according to Payne. Previously, the software supported a shared X.400/SMTP backbone.

Indeed, much of the software resulted from consulting work Control Data did for its customers, which include Unilever PLC, The U.S. Army Corps of Engineers and The World Insurance Network.

Pricing will be announced when the products ship (see graphic). Most of the offerings will initially run on several Unix platforms, Payne said.

©Control Data: (612) 482-2100.

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Masters of Networking: **ascom Timeplex**

Intel aims to cut the cost of managing networked PCs

By John Robinson

New York

Andy Grove and company want to trim 15% off the cost of owning and operating networked PCs by building management capabilities into motherboards and developing other new management applications.

At Intel Corp.'s Wired for Management conference here last week, the Intel chief executive officer praised the PC for its Darwinian adaptability while calling upon the network industry to follow Intel's lead and take advantage of the PC's flexible nature to cut costs.

"We have to provide a more robust computing and networking environment while reducing the costs. . . without cutting into flexibility and adaptability," Grove told several thousand attendees, including executives from Cisco Systems, Inc., Compaq Computer Corp., Microsoft Corp., Hewlett-Packard Co. and IBM.

Intel wants to lower the average cost of owning and managing a networked PC from \$9,324 to \$6,800 by next year and is attempting to accomplish this in three ways:

- Through Intel software development kits, enabling vendors of software, PCs and network hardware to develop products based on the Desktop Management Interface, the Desktop Management Task Force's standard for ensuring interoperability and management of hardware and software.

- Developing products that allow IS managers to remotely install, configure and manage PCs.

- Increasing the capabilities of management suites by continuing to develop integration-ready applications for enterprise management. The company, however, did not announce upcoming products in this area.

To illustrate its commitment to reducing management costs, Intel announced three OEM server platforms that include its LANDesk enterprise management software. The software allows administrators to respond to problems from remote locations, reducing costs incurred for downtime or travel to the site, Grove noted.

LANDesk utilizes Inference Corp.'s CasePoint search engine, which is linked to a knowledge base that supplies administrators with access to common solutions. If needed, managers can take control of a user's PC remotely to fix a problem.

The three Pentium Pro platforms are available in single-, dual- and four-processor configurations, each consisting of a motherboard, chassis and management software. Pricing was not available.

Tuesday's conference also included a demonstration showcase, offering an Intel-centric view of network computing, with third-party vendors displaying Intel-based hardware.

Software vendors also hawked their management wares at the conference. Bluecurve, Inc. introduced DynaMeasure, a tool to measure client/server capacity and performance. Phoenix Technologies, Ltd. and CyberMedia demonstrated their ActiveHelp technology, which intercepts, diagnoses and, if possible, fixes a problem when prompted by a user. ■



Intel CEO Grove wants to make management of networked PCs less expensive and more reliable.

WorldCom opens Web mgmt. window

Web Network Management System lets customers monitor voice, data net performance.

By David Rohde

Tulsa, Okla.

The ease and ubiquity of the World-Wide Web are forcing long-distance carriers to reevaluate how they give users a view into their networks.

Beating its rivals to the punch, LDDS WorldCom recently introduced an inexpensive Web browser link to live-circuit performance data.

The carrier's new Web Network Management System (NMS) enables users with a browser to monitor performance of their data and voice WANs. The system gives network administrators their choice of hour-by-hour and day-by-day statistics on frame relay, dedicated access and toll-free circuits.

For example, on a near real-time basis, frame relay users can see hourly and daily reports on the percentage of frames marked discard-eligible due to bursting above the committed information rate (CIR). Alternatively, users can compare CIRs to actual traffic load to help determine when port expansion is necessary (see graphic).

The Web NMS toll-free application enables call center managers — especially those with many 800 or 888 numbers coming into the same facility — to

determine on an hourly basis how many calls are being answered or dropped in queue for each telephone number.

To use Web NMS, users actually go into WorldCom's password-protected corporate intranet, said Michael Coar, one of two Web NMS product manag-

ers. The Web NMS screens also include online help and customer feedback links.

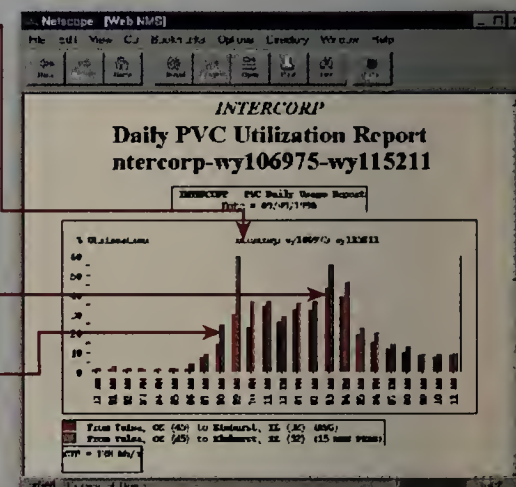
Web NMS is available now and costs \$250 a month each for the frame relay and dedicated access line services, and \$500 a month for the toll-free service. Initial users may experience a slight

WEB NETWORK MANAGEMENT SYSTEM

1. Network administrators can view the hour-by-hour percentage utilization of a specific two-way permanent virtual circuit.

2. The solid bar for each hour shows the average utilization, compared to CIR, for that hour.

3. The dotted bar shows the utilization for the peak 15-minute segment within the hour.



ers. To provide an additional level of security, "the servers are partitioned on a customer-by-customer basis," Coar said.

Hyperlinks enable Web NMS users to click on individual physical or virtual circuits, check the traffic load through specific frame relay ports, or switch among hourly, daily and histori-

cal summaries. The Web NMS screens also include online help and customer feedback links. Web NMS is available now and costs \$250 a month each for the frame relay and dedicated access line services, and \$500 a month for the toll-free service. Initial users may experience a slight

additional cost because WorldCom officials are not allowing access directly from the Internet. Instead, they are asking users to employ one of their frame relay permanent virtual circuits or 56K bit/sec private lines to enter the WorldCom intranet.

©LDDS WorldCom: (800) 364-5113.

Net technologies

FTP goes for broke with Java agents

By Ellen Messmer

Andover, Mass.

Its core business gutted by the TCP/IP stack giveaways, a money-losing FTP Software, Inc. is bailing out of a number of acquisitions and embarking on a bold new drive into Java-based intelligent agents.

The company is now pinning its hopes on Java-based intelligent agents that perform tasks such as user authentication and remote data retrieval.

Taken as a whole, FTP's suite of Java-based intelligent agents "will bridge corporate network boundaries so trading partners can easily set up or tear down a virtual network of user privileges," said Peter Simkin, FTP's chief technology officer.

Very important strategy

FTP calls it the Virtual IP (VIP) Network. FTP, which has been working on intelligent agent technology for more than

two years, intends to come to market by year-end with Java-based products that comprise VIP management services.

The services will include elements such as Java-based software for existing IP stacks that will perform encryption based on the IP Security standard. In other cases, an agent could reconcile directories or manage IP addresses.

In addition, the software could authenticate trading partners by requiring them to present X.509 certificates for identification via a Java-capable browser.

"The agents could go get things off of Web sites with URLs," said Simkin, who demonstrated the technology last week at *Network World* headquarters in Framingham, Mass. FTP's

intelligent agent called Update Sales, for example, could take data to an Excel spreadsheet, open it, add the sales data and close it.

FTP's customers said they are intrigued by the VIP Network strategy. "It's definitely interesting, and I see at least five ways I would use it for security and IP management," said David Sims, technical manager of information technology for Schlumberger, Ltd., an oil-field services company in Sugar Land, Texas.

"Conceptually, at least, they're on target," said Beach Clark, manager of network architecture at The Home Depot, Inc.

Major reboot

Glenn Hazard, who joined FTP as president just four months ago, acknowledged that



Hazard says FTP has been unsuccessful expanding into new markets so far.

the company, whose core business has been selling TCP/IP stacks, has been unsuccessful in expanding into other areas where it had invested substantially.

"A year ago, FTP launched off into the browser business and acquired scheduling and groupware businesses," Hazard said. He acknowledged that FTP made little headway against competitors such as Netscape Communications Corp., Microsoft Corp. and Lotus Development Corp.

With FTP's 1995 profits of \$24.6 million plummeting to \$21.5 million in losses so far this year, Hazard aims to turn things around by selling off pieces such as OnTime scheduling software.

But some analysts cautioned it will be an uphill climb for FTP's new management team.

"They came in to a complete mess, and they're being very straightforward about that," said Paul Callahan, group director of IT research, network strategy services at Forrester Research, Inc., a Cambridge, Mass.-based consultancy. ■

“

OKAY,
SO THIS IS THE FUTURE
OF THE ENTERPRISE.

”

High technology will be the foundation for distributed computing systems. And because they will enable a new, more logical approach to network implementation and use, directories will have a dramatic impact for the better on the way networks are used and managed. They will also make possible a new generation for distributed applications. We call this 'directory-enabled computing', and it will be the most significant technology issue for customers as we approach the end of the decade."

THE BURTON GROUP

High technology will be the foundation for distributed computing systems. And because they will enable a new, more logical approach to network implementation and use, directories will have a dramatic impact for the better on the way networks are used and managed. They will also make possible a new generation for distributed applications. We call this 'directory-enabled computing', and it will be the most significant technology issue for customers as we approach the end of the decade."

Carrier plans global IP voice service

International packet voice offering would be 20% to 40% less expensive than dial-up links.

By Tim Greene
Toronto

The promise of cheap voice over public IP networks is coming to fruition.

AlphaNet Telecom, Inc. will introduce an IP-based international voice service early next year offering 20% to 40% lower rates than traditional international dial-up services, according to the company.

The savings will come from using less costly data trunks, avoiding conventional fees for landing voice traffic on foreign public phone systems and compressing the voice traffic by as much as 15-to-1.

But the service has limits. In many countries, the phone companies are strictly regulated and charge costly settlement fees for

international voice traffic regardless of how it is transported. And, judging by a demonstration, the service delivers less than toll-quality voice, clipping syllables and introducing slight delay.

Michael Reichmann, executive vice president of the company, also admitted that in countries with analog trunks echoing is a problem.

To sidestep the first limitation, the service will only be offered to countries with deregulated phone systems, a limitation in its own right.

"How many companies are there that don't call Germany or France or Italy, but do call Great Britain and Japan?" asked Bob Nerz, president of Network Technologies, a network design

firm in North Attleboro, Mass.

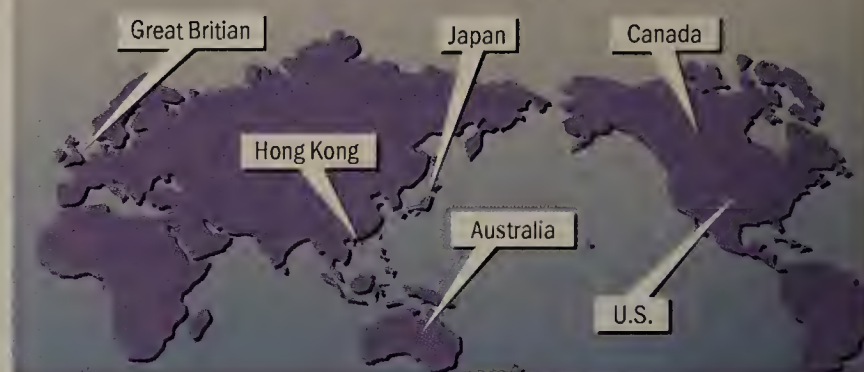
To address that, AlphaNet is teaming up with Sprint Corp. and its international alliance, GlobalOne, to land calls in regulated countries, forgoing the IP savings, Reichmann said.

Len Elfenbein, president of Lynx Technologies, Inc., an international telephone consultancy in Fairfield, N.J., said the service would appeal to users that have no dedicated international links of their own.

When such private lines are loaded to just 5% of their capacity, they cost the user 20% or less of the cost of an international dial-up link. But it takes a pretty large corporation to generate enough phone traffic to make that worthwhile, he said. Large users with their own interna-

THE IP CALL HEARD 'ROUND THE WORLD

These are the initial markets for international voice over IP service from AlphaNet. Singapore, Korea and Europe are close behind.



tional data networks already load voice on to those networks.

To use the service, customers will dial a toll-free number and a six-digit access code to connect with an AlphaNet server, then punch in the number of the called party.

The server compresses the voice call and packages the voice traffic into IP packets. Those packets are routed over frame relay links to a Sprint point of

presence where the traffic is shipped over a Sprint GlobalOne international data link.

An AlphaNet server in the appropriate foreign country unwraps the IP packets and sends the traffic along to the local public phone company as a digital voice signal on an E-1 line. The call is completed on the local public switched phone network.

©AlphaNet: (416) 923-2222.

BBN Planet makes 'Net service promise

Company completes backbone upgrade, joins ISP move to tighten nets for intranet traffic.

By Joanie Wexler
Cambridge, Mass.

A semblance of order is coming to the freewheeling Internet.

BBN Planet last week became one of the early Internet service providers to launch a basic service-level guarantee, promising a day's free usage in compensation for 15 minutes of downtime for a given site.

BBN joins a number of ISPs running nationwide backbones that are putting compensation packages in place in an effort to make customers more comfortable about relying on the Internet (see graphic). These commitments could spur more use of the 'Net for corporate intranet traffic, analysts said.

"The applications most information technology managers are worrying about are intranet applications," said Carl Howe, senior analyst at Forrester Research, Inc. in Cambridge, Mass. "A single-vendor guarantee helps in selling service to one company with multiple sites."

The next important phase will be for ISPs to guarantee some level of network performance in addition to uptime, he added.

And cross-ISP guarantees are more than a year away, predicted Dan Merriman, a director at Giga Information Group, a research firm also in Cambridge. "The ISPs have enough challenges getting guarantees in

nical officer. The upgrade brings the number of BBN T-3 circuits traversing the country from one to three.

In addition, the company has standardized on the equipment and 'Net technologies within its

'NET PROVIDER PROMISES

Here is a sampling of ISP service-level commitments.

ISP	Guarantee	Local loop included?	When available
AGIS	98% net availability throughout the month or the month's service is free. Will also offer three performance guarantee options.	Yes, if AGIS-provisioned	Q4
ANS	For every four consecutive hours of downtime, site receives a full day's credit.	Yes	Now
BBN Planet	For 15 minutes or more of downtime in a day, site receives a full day's credit.	No	Oct. 1
UUNET	For every hour of consecutive downtime in a calendar month, site receives a full day's credit. For four hours of downtime (not necessarily consecutive), site receives a week's credit.	No	Now

place for their own networks," he said.

Some degree of cross-network commitments could be important for companies that want to collaborate with one another or partake in electronic commerce activities over the 'Net.

New backbone paves way

One reason BBN feels confident enough to offer service-level guarantees is because it has just completed its nationwide Internet backbone upgrade, said John Curran, BBN's chief tech-

Internet points of presence (POP), Curran said.

Each BBN backbone POP contains several Cisco Systems, Inc. 7513 routers sitting on two single-attached FDDI rings. Some are dedicated to accepting customer connections; others link to the T-3 backbone circuits, as well as to each other by a 120M bit/sec point-to-point ATM connection within the POP. The direct ATM link allows traffic traversing the backbone to quickly bypass the FDDI net en route to its destination.

The one spot of vulnerability

remains the customer access link, Curran acknowledged.

A single line runs into a single router in the BBN POP. If that line or the router connected to it should fail, customers are out of luck, unless they have purchased

a second, redundant circuit to another BBN customer access router, he explained.

The BBN guarantee does not cover the access lines but does cover the equipment in the BBN POPs. ■

Motorola readies softmodems

By Tim Greene
Mansfield, Mass.

Motorola, Inc. is getting ready to jump into the emerging market for softmodems, a new breed of communications devices that rely heavily on software and the processing power of the host PC.

The company said that by year-end it will join the likes of start-up PCtel, Inc., which has been shipping softmodems, or host signal processor (HSP) modems, since February.

Rather than relying on its own digital signal processor, HSP modems are based on a cheaper Application Specific Integrated Circuit and sponge off a PC's central Pentium chip for processing power.

HSP modems can also be upgraded via a software download.

For example, if the 56K bit/sec modems now being developed by several vendors make it to market, a 33.6K

bit/sec HSP modem could be boosted to the higher speed without ripping out any hardware.

Already, PCtel has added software to give 33.6K bit/sec speed, speakerphone capability and alternate voice and data capabilities to PCtel hardware that originally shipped as 28.8K bit/sec modems.

HSP technology has been around for several years, but only recently has become feasible because of the growing availability of Intel Corp. Pentium processor-based desktop computers.

This week Motorola will announce its plans to introduce an HSP product line geared toward remote access, telecommuters and mobile workers.

The line will eventually go beyond analog modems to include ISDN terminal adapters and digital subscriber line modems, according to Patrick Casey, Motorola's marketing director for software communication.

HSP technology has been around for several years, but only recently has become feasible because of the growing availability of Intel Corp. Pentium processor-based desktop computers. ■

"If you compare Windows NT Server to NetWare 4, then Novell has a significant advantage because of its centralized directory."

Gartner Group's Dave Cappuccello

"NetWare 4's momentum is driven in part by customers' demand for NDS... NDS provides leading directory services for distributed networks."

Lee Doyle, IDC

"The most complete directory service strategy... is Novell's... Novell is still 12+ months ahead of Microsoft..."

META GROUP

OKAY, SO NOVELL® FOUND A FEW ANALYSTS WHO SHARE ITS VISION.

BUT THAT DOESN'T MEAN
REAL WORLD CUSTOMERS WILL.

"Novell is really positioning NDS as a specific Internet or client/server distributed set of products not tied to NetWare."

LEE DOYLE, IDC

Most notably, NT Server lacks a comprehensive directory service. By contrast NetWare provides most of the capabilities necessary in a large-enterprise network operating system - especially in Novell Directory Services (NDS)."

Gartner Group

Battle brewing over Java digital signature

By Ellen Messmer
and Carol Sliwa

A recent promise from the Java community is simple and compelling — a world where Java applets are signed digitally, so users can tell where they came from and be sure they haven't been tampered with along the way.

But there will not be an official Java digital signature technology at least until Sun Microsystems, Inc. ships the long-delayed Java DevelopersKit (JDK) 1.1, which is not expected until year-end.

Microsoft Corp., Netscape Communications Corp. and the U.S. Department of Defense are not willing to wait.

The two browser rivals have been busy cooking up their own technologies, and they are now gearing up for another standards battle at the World Wide Web Consortium (W3C).

Microsoft has already included an Authenticode feature in its Internet Explorer 3.0 browser for digitally signing and verifying Java applets and ActiveX controls. Explorer 4.0, due out by year-end, will also be able to sign E-mail and files.

Microsoft has proposed the underlying technology, dubbed Safe Technology, to the W3C as an industry standard, said Pradyuma Misra, manager of the Internet Security Product unit in the Internet Platform and Tool Division at Microsoft.

Netscape is not sitting still, either.

The company has yet to make public its digital signature technology. However, those working closely to develop it noted that a piece of the object signing architecture, known as SetScope, goes beyond simple applet code signing and will let the user define more flexible uses of applets

than are allowed under Sun's Java security model at present.

"Applets now are restricted in what they can do," said Marianne Mueller, a JavaSoft staff engineer familiar with Netscape's efforts. "Today, you download an applet and it's not allowed to read a file or erase a

Check out:

- Internet security white papers from Microsoft and Netscape
- A Java security FAQ from the people who have discovered several Java holes

Enter the number below in the DocFinder box on the home page.



disk, for example."

Netscape will include the technology in the next release of its Navigator browser. However, Sun will not include SetScope as part of JDK 1.1, said Mueller.

JavaSoft security architect Li Gong said every effort is being made to ensure the JDK 1.1 digi-

tal signature has a basic level of interoperability with Netscape's SetScope.

Though Microsoft, Netscape and Sun may fight at the W3C over digital signatures, they are bound to come together in the end for interoperability, Mueller said. At least all three are using one common element, RSA Data Security, Inc.'s Public Key Cryptography Standard No.7 specification for digital signatures.

Java application developers, though, voiced concerns.

"It would be a hardship to developers to have to support three different types of authentication," said Ted Young, presi-

dent of Advanced Web Technologies in New York. "If it gets too complicated, some designers may just pick one."

The Defense Department has expressed its own concerns in the past about the lack of Java security controls and now is looking at developing its own approach.

Last week, the Defense Advanced Research Projects Agency announced it has awarded Trusted Information Systems, Inc. a two-year, \$1.5 million contract to develop what it calls security wrappers for a Java Prototype System as well as one for the Unix operating system. ■

Insite

Continued from page 1
focuses on voice.

The decision was made over the summer after Sprint missed its second-quarter ship date for the product. Sprint officials changed course due to users' interest in independent vendors' configuration management tools and emerging real-time circuit reporting applications on the World-Wide Web, the company claimed.

and limited functionality focusing on 800-call routing and call detail reporting.

More voice in Premiere

A planned Windows NT version of Insite, known originally as Insite PC and now renamed Premiere PC, will be released this fall, said Becky Johnston, Sprint's group manager for customer network management services. But Premiere PC still will only offer a graphical look into Sprint's network for circuit-

IBM and Lotus woo OfficeVision users to Notes

By Michael Cooney
and Barb Cole

Cambridge, Mass.

IBM and its Lotus Development Corp. subsidiary last week announced a variety of products designed to help individual-minded customers of IBM OfficeVision (OV) and other legacy mail systems migrate to the collaborative world of Lotus Notes.

Three OV Migration Tool packages from IBM will enable users to import OV directories and data into Notes databases. In addition, the Notes client will be enhanced to support the exchange of mail and calendaring information with OV/MVS, OV/VM and OV/400 users.

The IBM tools are based on the Notes Migration Toolkit rolled out last week and will let administrators bring over large numbers of users, automatically update directories and create mail folders for new Notes users.

Migrating OV users is key to the IBM/Lotus strategy. Announced in 1989, OV was designed as the one-stop shop for E-mail, database access, calendaring and other services. While IBM killed off a low-end version in 1992, the package proved successful on mainframes and minicomputers.

IBM said it hopes the new tool

will convince OV customers to take the Notes plunge.

"The migration tools IBM has tried in the past have required a forklift and haven't convinced enough people to go to Notes anyway," said Frank Dzubeck, president of the Communications Network Architects, Inc. consultancy in Washington, D.C. "With this

Lotus will also sell its Notes Migration Toolkit to IS shops and developers that wish to build their own migration tools. Lotus said last week that Notes third-party developers are already working on migration products for Digital Equipment Corp.'s All-in-1, Fischer International, Inc.'s TAO, Verimation, Inc.'s Memo and H&W Computer Systems, Inc.'s SySM.

For users who want to utilize Notes' collaborative capabilities but not migrate completely, IBM will offer OV/MVS, OV/VM and OV/400 Support for Lotus Notes Clients packages. "The Notes client support means that users can get the Notes [graphical user] interface without replacing their entire infrastructure," said Mark Levitt, an analyst at International Data Corp. in Framingham, Mass.

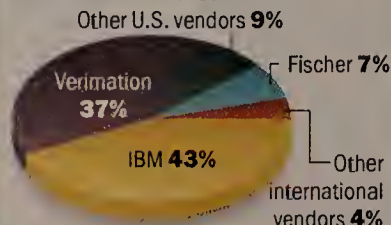
IBM did not say when its migration packages will be available, although the OV/MVS tools are in beta. Pricing will be announced when the products are ready, IBM said.

The Lotus Notes Migration Toolkit is available now in limited quantities but will be widely available in the first quarter of 1997. Pricing depends on the messaging platform the user is migrating from.

©Lotus: (617) 577-5000.

IBM'S OFFICEVISION ON TOP

Worldwide installed mainframe electronic mailboxes



Based on 7.25 million installed mailboxes.
SOURCE: IDC, FRAMINGHAM, MASS.

announcement, IBM looks like it is providing a reasonable, elegant way to get users to Notes without a lot of fuss."

The key, Dzubeck said, is that the migration packages give users a choice — to totally migrate off OV or to run it in conjunction with Notes.

IBM will offer OV migration tools for OV/VM and OV/400. A third party, TBS Software, Inc., will provide the migration tools for OV/MVS mainframes.

An Insiteful look from Sprint

July 1989

Announces commercial availability of Insite, its first network management system.

January 1992

Announces the first product called Insite Executive, a platform designed to unify voice and data network management.

1989

1992

1993

1996

May 1992

Insite starts supporting management of 800 lines.

February 1993
Announces Insite ACT.

January 1996

Announces a product again called Insite Executive plus Insite PC — Unix and NT graphical interfaces, respectively.

July 1996
Discontinues Insite platform.

Insite Executive was designed to provide a graphical interface into private-line, packet data and voice network configurations, with user-controlled bandwidth-on-demand options (NW, Feb. 12, page 17).

Sprint officials said they still hope eventually to introduce a product with those features. That product is an object software development effort to bring to market user applications working across multiple operating systems, said Bart Westberg, Sprint's director of enterprise services.

But Sprint is ending the long-standing Insite network management platform, Westberg confirmed.

Despite numerous announcements, Insite never progressed past a text-based architecture

switched services such as 800 lines. The existing Insite text-based product will be supported only for six months or until a second version of Premiere PC is released.

User cost was a factor in Sprint's strategy shift, Johnston said. The Insite Executive software was priced at \$2,500 for installation plus \$1,600 a month, with additional charges for router and workstation leases, and for features such as alarm surveillance.

In the meantime, Web servers have emerged as the most cost-effective way to provide reporting applications, Johnston said. Sprint may expand its recently introduced Sprint InTouch Internet trouble-ticket application to include circuit reporting, she indicated. ■

"It's simple with NDS, the network does the work. Without NDS, I do the work."
ERIC GORDEN
SENIOR SOFTWARE
ENGINEER
TOUR ICE INC.

NIRAJ PATEL
**CHIEF TECHNOLOGY
OFFICER**
GMAC MORTGAGE
"For our purposes, we needed one place for all the network information. We went to NetWare 4 because of NDS. It's great to have a central NDS to do all of the manage..."

"NDS allows us to manage large or small network environments much easier and faster from a single console due to its network-centric design."
J. DOUGLAS CROWDER,
VICE PRESIDENT & NETWORK ARCHITECT,
INTEROPERABILITY SOLUTIONS GROUP,
TUSCON, AZ

MIKAELE RACINE,
MANAGER OF CLIENT SERVER
TECHNICAL SUPPORT
JOHN AND HAAS COMPANY
Novell Directory Services makes our global 10,000 node network to look like one enterprise LAN. Standardizing on NetWare 4 as our NOS made our global migration easy to plan, roll out, and manage. We gained immediate benefits from NDS when we installed it at the first of our 80 sites and we continue to leverage it. Our businesses now have better access and control of their data. NDS allows us to administer our LAN today from any desktop with fewer people. We have found NDS to be robust and stable. Basically, NetWare 4 works!"

Oh.

...enables our users to access information and resources across the enterprise with a single log-in."

DENNIS OLSON
SENIOR NETWORK
SYSTEMS ANALYST
ROCKWELL AUTOMATION
ALLEN-BRADLEY

"At Lawrenceville, it's critical for us to assign unique access privileges to each group of students, faculty, and staff - more than 1,000 users. With NDS, that task is simple and straightforward. It's one thing we don't have to worry about."
Susan Riederer
Chief Information Officer
The Lawrenceville School
Lawrenceville, New Jersey

"NDS is it easy to manage and maintain the network from an administrator's standpoint and it allows users to log-in once to access all the resources on the network."
KEVIN PUENT, SENIOR
NETWORK ADMINISTRATOR,
NORTEL COMMUNICATIONS
SYSTEMS WEST

"NetWare 4.1 is the directory service. I can now create objects or users, log-in scripts, passwords, etc. from one location. With servers all over the world, I have the ability to give rights to people they are. No doubt about it, this has made life much simpler."
TODD PENNINGTON
IT'S MANAGER
LEGAL COPIES INTERNATIONAL

"NDS allows us to manage this system more efficiently because now users are able to get to the applications no matter where they are."
DON RAMSEY
INFORMATION
TECHNOLOGY ARCHITECT
CHILDREN'S MEDICAL
CENTER OF DALLAS

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safely store all
the information
on the planet.

SAVE

Somehow, the smaller the world gets, the more its information grows. Each day, networked computers are making more kinds of information available to more people than ever before. From last night's sales figures to next year's economic forecasts, information is the lifeblood of business. And that makes managing and storing it even more vital.

At IBM, we're constantly thinking of new ways to maximize the value of information to your company. Part of which means understanding that different

kinds of users can have different kinds of storage needs. For some, the reliability of a 24-hour, seven-day-a-week system is critical. For others, having fast access is key. And with rare exception, cost is always an important consideration.

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fastercheaper

RAMAC Scalable Array lets you add both capacity and performance when your requirements change. Need more speed? The RAMAC Electronic Array gives users hyperfast access to stored data. And if your priority is simply the highest level of data availability, the new RAMAC 3 delivers it with twice the capacity and up to three times the speed of our earlier designs.

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☐ **Yes!** I want my **FREE** subscription to *NetworkWorld*. ☐ No. Thank You.

Do you wish to receive Intranet Magazine? (It will be a monthly publication with content similar to Intranet supplement within Network World.) ☐ Yes ☐ No

Sign Here

Signature _____ Date _____

To qualify: You must supply your company name and address. *Please Print Clearly.*

Name _____ Title _____

Company _____

Address _____

City _____ State _____ Zip _____

Business phone (_____) _____

Business FAX (_____) _____

Internet e-mail address _____

If there is a parent company, please provide name: _____

1 Industry: (check one only)

- | | |
|---|--|
| 01. <input type="checkbox"/> Manufacturers (other) | 12. <input type="checkbox"/> Government (Federal/State/Local) |
| 02. <input type="checkbox"/> Finance/Banking | 13. <input type="checkbox"/> Military |
| 03. <input type="checkbox"/> Insurance/Real Estate/Legal | 14. <input type="checkbox"/> Aerospace |
| 04. <input type="checkbox"/> Health Care Services | 15. <input type="checkbox"/> Consultants (Independent) |
| 05. <input type="checkbox"/> Hospitality/Entertainment/Recreation | 16. <input type="checkbox"/> Carriers/Interconnects |
| 06. <input type="checkbox"/> Media/TV/Cable/Radio/Print | 17. <input type="checkbox"/> Manufacturers (Computer/Communications) |
| 07. <input type="checkbox"/> Retail/Wholesale Trade/Business Services | 18. <input type="checkbox"/> Resellers of Computer/Network Products (VARs, VADs) |
| 08. <input type="checkbox"/> Transportation | 19. <input type="checkbox"/> Systems/Network Integrators |
| 09. <input type="checkbox"/> Utilities | 20. <input type="checkbox"/> Distributors (Computer/Communications) |
| 10. <input type="checkbox"/> Education | 21. <input type="checkbox"/> Other (please specify) _____ |
| 11. <input type="checkbox"/> Process Industries (Mining/Construction/Petroleum Refining/Agriculture/Forestry) | |

2 What is your job function? (check one only)

- NETWORK IS MANAGEMENT:**
- | | |
|---|--|
| 1. <input type="checkbox"/> Networking Management | 5. <input type="checkbox"/> Engineering Management |
| 2. <input type="checkbox"/> LAN Management | 6. <input type="checkbox"/> Corporate Management (CIO, CEO, Pres., VP, Dir., Mgr., Financial Management) |
| 3. <input type="checkbox"/> Datacom/Telecom Management | 7. <input type="checkbox"/> Consultant (Independent) |
| 4. <input type="checkbox"/> IS, IT, MIS, Systems Management | 8. <input type="checkbox"/> Other (please specify) _____ |

3 What is the estimated value of networking equipment and services that you help specify, recommend or approve? (check one only)

- | | | |
|--|--|--|
| 01. <input type="checkbox"/> \$100 million or more | 05. <input type="checkbox"/> \$10 mil. - \$19.9 mil. | 09. <input type="checkbox"/> \$250,000 - \$499,999 |
| 02. <input type="checkbox"/> \$50 mil. - \$99.9 mil. | 06. <input type="checkbox"/> \$5 mil. - \$9.9 mil. | 10. <input type="checkbox"/> \$100,000 - \$249,999 |
| 03. <input type="checkbox"/> \$25 mil. - \$49.9 mil. | 07. <input type="checkbox"/> \$1 mil. - \$4.9 mil. | 11. <input type="checkbox"/> None of the above |
| 04. <input type="checkbox"/> \$20 mil. - \$24.9 mil. | 08. <input type="checkbox"/> \$500,000 - \$999,999 | |

4 What is the total number of sites for which you have purchase influence? (check one only)

- | | | |
|-------------------------------------|-------------------------------------|----------------------------------|
| 1. <input type="checkbox"/> 100+ | 4. <input type="checkbox"/> 10 - 19 | 7. <input type="checkbox"/> None |
| 2. <input type="checkbox"/> 50 - 99 | 5. <input type="checkbox"/> 2 - 9 | |
| 3. <input type="checkbox"/> 20 - 49 | 6. <input type="checkbox"/> 1 | |

5 Are you involved in the purchase of and/or plan to purchase network products and services?

☐ Yes ☐ No

6 Check ALL that apply in Columns A and B:

- A. I am involved in the purchase of the following products/services:
- B. I plan to purchase the following products/services:

LOCAL-AREA NETWORKS

- A**
- ☐ 01. Local-Area Networks
 - ☐ 02. Network Op. Sys. Software
 - ☐ 03. LAN Storage/Backup
 - ☐ 04. Optical LAN Storage/Backup
 - ☐ 05. Disk LAN Storage/Backup
 - ☐ 06. Tape LAN Storage/Backup
 - ☐ 07. RAID LAN Storage/Backup
 - ☐ 08. Network Test/Diagnostic Tools
 - ☐ 09. Cables, Connectors, Baluns
 - ☐ 10. UPS
 - ☐ 11. Network Interface Cards
 - ☐ 12. Peer-to-Peer LANs
 - ☐ 13. SNMP Network Management
 - ☐ 14. ATM Switches
 - ☐ 15. Token-Ring Switches
 - ☐ 16. Ethernet Switches
 - ☐ 17. Remote LAN Access/Communications Servers
 - ☐ 18. Superservers
 - ☐ 19. File/Application Servers
 - ☐ 20. Print Servers/Fax Servers
 - ☐ 21. CD-ROM Servers
 - ☐ 22. LAN Servers

INTERNETWORKING

- A**
- ☐ 23. Bridges
 - ☐ 24. Routers
 - ☐ 25. Bridge/Router
 - ☐ 26. Gateways
 - ☐ 27. Intelligent Hubs
 - ☐ 28. Stackable Hubs

COMPUTERS/PERIPHERALS

- A**
- ☐ 29. Laptops/Notebooks/Sub-Notebooks
 - ☐ 30. Micros/PCs
 - ☐ 31. Minis
 - ☐ 32. Mainframes
 - ☐ 33. Workstations
 - ☐ 34. Terminals
 - ☐ 35. Printers/Network Printers
 - ☐ 36. Cluster Controllers
 - ☐ 37. CD-ROM
 - ☐ 38. Fax/Modem Boards

REMOTE/WIRELESS COMPUTING

- A**
- ☐ 39. PDAs
 - ☐ 40. PCMCIA Devices
 - ☐ 41. Wireless Data Services
 - ☐ 42. Wireless Data Equipment
 - ☐ 43. Wireless LANs
 - ☐ 44. Cellular Equipment & Services

INTERNET/INTRANET

- A**
- ☐ 45. Internet Access Service
 - ☐ 46. Firewalls/Security
 - ☐ 47. Web Servers

INTERNET/INTRANET (cont'd)

- A**
- ☐ 48. Web Browsers
 - ☐ 49. Intranet Applications/Groupware
 - ☐ 50. Search Retrieval Products (web crawler)
 - ☐ 51. Internet Development Tools
 - ☐ 52. Internet Commerce Tools

SOFTWARE/APPLICATIONS

- A**
- ☐ 53. Network Management
 - ☐ 54. Systems Management
 - ☐ 55. Security
 - ☐ 56. Communications Software
 - ☐ 57. Terminal Emulation
 - ☐ 58. Word Processing
 - ☐ 59. Operating Systems
 - ☐ 60. Client/Server Applications Development
 - ☐ 61. Database Management/RDBMS
 - ☐ 62. Spreadsheet
 - ☐ 63. Groupware
 - ☐ 64. EDI
 - ☐ 65. E-mail
 - ☐ 66. Windows/Graphical User Interface
 - ☐ 67. Multimedia
 - ☐ 68. Graphics/DTP
 - ☐ 69. Remote Access
 - ☐ 70. Imaging
 - ☐ 71. Server Suites (Back office, etc.)
 - ☐ 72. Suites
 - ☐ 73. Middleware
 - ☐ 74. Document Management
 - ☐ 75. Database Server
 - ☐ 76. Site Metering Tools
 - ☐ 77. Computer-Integrated Telephony (CIT)

WIDE-AREA NETWORK EQUIPMENT & SERVICES

- A**
- ☐ 78. Frame Relay Equip./Services
 - ☐ 79. Modems
 - ☐ 80. FT-1/T-1/T-3 Multiplexers
 - ☐ 81. FT-1/T-1/T-3 Services
 - ☐ 82. SONET
 - ☐ 83. Inverse Multiplexers
 - ☐ 84. SMDS
 - ☐ 85. Asynchronous Transfer Mode
 - ☐ 86. Diagnostic/Test Equipment
 - ☐ 87. DSU/CSU
 - ☐ 88. VSAT/Satellite
 - ☐ 89. ISDN Equipment & Services
 - ☐ 90. PBXs
 - ☐ 91. Voice Mail/Response
 - ☐ 92. Videoconferencing
 - ☐ 93. Leased Lines
 - ☐ 94. Switched Data
 - ☐ 95. E-mail
 - ☐ 96. 800/900/MTS Services
 - ☐ 97. Virtual Networks
 - ☐ 98. Outsourcing/Systems Integration Services
 - ☐ 99. Education/Training Services

☐ 107 ☐ None of the above (1-99)

NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING

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9602

7 Check ALL that apply in Columns A and B:

A. The following network platforms are currently installed:

B. The following network platforms are planned for purchase:

NETWORK PROTOCOLS

- A**
- ☐ 01. SNA
 - ☐ 02. DECnet
 - ☐ 03. TCP/IP
 - ☐ 04. Novell IPX/SPX
 - ☐ 05. APPC/APPN/LU 6.2
 - ☐ 06. NETBIOS
 - ☐ 07. AppleTalk
 - ☐ 08. NFS
 - ☐ 09. IPv6
 - ☐ 10. SNMP/SNMPv2
 - ☐ 11. Other (please specify) _____

LAN ENVIRONMENT

- B**
- ☐ 24. 4M Token Ring
 - ☐ 25. 16M Token Ring
 - ☐ 26. Ethernet
 - ☐ 27. Fast Ethernet
 - ☐ 28. 100vg Any LAN
 - ☐ 29. FDDI
 - ☐ 30. LocalTalk
 - ☐ 31. 10Base-T
 - ☐ 32. ATM
 - ☐ 33. Other (please specify) _____

NETWORK OPERATING SYSTEM

- A**
- ☐ 12. Microsoft (LAN Manager)
 - ☐ 13. Novell (NetWare 2.X, 3.X)
 - ☐ 14. Novell (NetWare 4.X)
 - ☐ 15. Windows NT
 - ☐ 16. Windows NT/Advanced Server
 - ☐ 17. LocalTalk (AppleTalk)
 - ☐ 18. Banyan (VINES)
 - ☐ 19. IBM (LAN Server)
 - ☐ 20. IBM (PC LAN Program)
 - ☐ 21. Artisoft (LANtastic)
 - ☐ 22. Digital (Pathworks)
 - ☐ 23. Other (please specify) _____

COMPUTER OPERATING SYSTEM

- B**
- ☐ 34. DOS
 - ☐ 35. Unix/Xenix/AIX
 - ☐ 36. OS/2
 - ☐ 37. OS/2 Warp
 - ☐ 38. IBM MVS
 - ☐ 39. IBM VM
 - ☐ 40. Digital VMS
 - ☐ 41. Macintosh
 - ☐ 42. Windows
 - ☐ 43. Windows 95
 - ☐ 44. NT
 - ☐ 45. Solaris
 - ☐ 46. Other (please specify) _____

☐ 47. ☐ None of the above (1-46)

8 What is your scope and involvement in purchasing decisions for network products & services for your enterprise?

A. SCOPE

- (check one only)
- ☐ 1. Corporate/Enterprise
 - ☐ 2. Department
 - ☐ 3. None

B. INVOLVEMENT (check all that apply)

- ☐ 1. Recommend/Specify
- ☐ 2. Approve
- ☐ 3. Evaluate
- ☐ 4. Determine the need
- ☐ 5. None

9 What is the total number of LANs, workstations/nodes at this location/in your organization?

At this location:

- | LANs | Workstations/
Nodes |
|---|--------------------------|
| 1. <input type="checkbox"/> 5,000+ | <input type="checkbox"/> |
| 2. <input type="checkbox"/> 1,000 - 4,999 | <input type="checkbox"/> |
| 3. <input type="checkbox"/> 100 - 999 | <input type="checkbox"/> |
| 4. <input type="checkbox"/> 50 - 99 | <input type="checkbox"/> |
| 5. <input type="checkbox"/> 10 - 49 | <input type="checkbox"/> |
| 6. <input type="checkbox"/> 1 - 9 | <input type="checkbox"/> |

Entire organization:

- | LANs | Workstations/
Nodes |
|---|--------------------------|
| 1. <input type="checkbox"/> 5,000+ | <input type="checkbox"/> |
| 2. <input type="checkbox"/> 1,000 - 4,999 | <input type="checkbox"/> |
| 3. <input type="checkbox"/> 100 - 999 | <input type="checkbox"/> |
| 4. <input type="checkbox"/> 50 - 99 | <input type="checkbox"/> |
| 5. <input type="checkbox"/> 10 - 49 | <input type="checkbox"/> |
| 6. <input type="checkbox"/> 1 - 9 | <input type="checkbox"/> |

10 Please indicate your involvement in developing/implementing Internet/Intranet Technologies: (check all that apply)

- ☐ 1. Recommend/Specify
- ☐ 2. Approve
- ☐ 3. Evaluate
- ☐ 4. Determine the need
- ☐ 5. Implement
- ☐ 6. None

11 Which of the following hardware platforms are installed/planned in your company? (check all that apply)

- | | Mainframes
A - Installed B - Planned | Minis
C - Installed D - Planned |
|-----------------|---|------------------------------------|
| 1. IBM | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Amdahl | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Cray | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Hitachi | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Unisys | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Data General | <input type="checkbox"/> | <input type="checkbox"/> |

What is the total number of Servers/Clients installed/planned: (USE NUMBERS ONLY)

- | E-AT THIS LOCATION | # | F-% with
Internet Access |
|--------------------|----------------------|-----------------------------|
| 1. Servers | <input type="text"/> | <input type="text"/> % |
| 2. Clients | <input type="text"/> | <input type="text"/> % |

G-ENTIRE ORGANIZATION

- | # | H-% with
Internet Access |
|------------|-----------------------------|
| 1. Servers | <input type="text"/> % |
| 2. Clients | <input type="text"/> % |

Which of the following Servers/Clients do you have installed/planned: (CHECK ALL THAT APPLY)

- | | A1 this location:
I-Servers | J-Clients | Entire organization:
K-Servers | L-Clients |
|-----------------------------|--------------------------------|--------------------------|-----------------------------------|--------------------------|
| 01. Power PC | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 02. Power Mac | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 03. Mac Other | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 04. Multi Processor Servers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 05. P6 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 06. Pentium Pro | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 07. Pentium | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 08. 486 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 09. 386 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. 286 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. Rise | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. Other | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

12 Estimated gross annual revenue of your entire company/institution: (check one only)

- | | | |
|--|--|--|
| 1. <input type="checkbox"/> \$10 billion or more | 4. <input type="checkbox"/> \$100 million to \$499.9 million | 7. <input type="checkbox"/> \$5 million to \$9.9 million |
| 2. <input type="checkbox"/> \$1 billion to \$9.9 billion | 5. <input type="checkbox"/> \$50 million to \$99.9 million | 8. <input type="checkbox"/> \$4.9 million or less |
| 3. <input type="checkbox"/> \$500 million to \$999.9 million | 6. <input type="checkbox"/> \$10 million to \$49.9 million | 9. <input type="checkbox"/> None of the above |

13 Estimated number of employees at this location/in entire organization:

- | A1 this location: | Entire organization: |
|---|---|
| 1. <input type="checkbox"/> Over 10,000 | 1. <input type="checkbox"/> Over 10,000 |
| 2. <input type="checkbox"/> 5,000 - 9,999 | 4. <input type="checkbox"/> 1,000 - 2,499 |
| 3. <input type="checkbox"/> 2,500 - 4,999 | 2. <input type="checkbox"/> 500 - 999 |
| | 3. <input type="checkbox"/> 2,500 - 4,999 |
| | 5. <input type="checkbox"/> 500 - 999 |
| | 6. <input type="checkbox"/> 499 or less |

14 For which areas outside of North America do you have purchase influence? (check all that apply)

- | | | |
|------------------------------------|---|---|
| 1. <input type="checkbox"/> Europe | 3. <input type="checkbox"/> South America | 5. <input type="checkbox"/> Middle East |
| 2. <input type="checkbox"/> Asia | 4. <input type="checkbox"/> Australia | 6. <input type="checkbox"/> None |

B0996

Videoconferencing system works with array of gear

General DataComm's Apex-Multimedia Multipoint Server supports different compression schemes.

By Tim Greene

Atlanta

General DataComm, Inc. (GDC) hopes you'll buy its new videoconferencing server, but it doesn't much care who you go to for your other video equipment.

That's because the Apex-Multimedia Multipoint Server (MMS), recently announced, supports gear that employs a variety of video compression schemes, from narrowband to broadband. And it does so delivering to each participant the

highest quality image the user's equipment can handle through MMS' combined hardware/software platform.

For example, a JPEG-compliant device tied into a five-way conference with three other JPEG users and an MPEG-compli-

ant device would get a quad-screen display. Three of those screens would have JPEG quality, and one would have MPEG quality.

Similarly, the MMS can set up conferences for users connected at different speeds, so a user with a 384K bit/sec link could conference with others tied in by a DS-3 at 45M bit/sec. Each quad-screen would project the highest quality image the link would allow.

The MMS also supports H.320 standards, allowing dissimilar videoconferencing systems to communicate with one another, and supports compression schemes including JPEG, MPEG1 and MPEG2.

By supporting different compression standards in the remote video equipment, Apex-MMS lets users employ videoconfer-

For maximum system performance you've got to have the right components.



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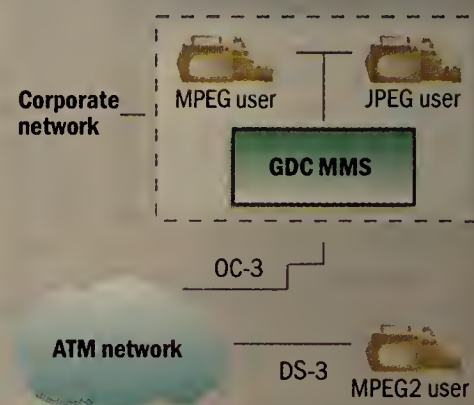
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ANYBODY'S VIDEO

GDC's Multimedia Multipoint Server (MMS) sets up videoconferences among video equipment using varying compression schemes.



encing equipment they already have as they upgrade to higher quality gear.

The Apex-MMS platform supports audio conferencing and data conferencing, and allows for the exchange of documents during audio and videoconferences. The Apex-MMS comes in 16-port or 32-port models. The 16-port version costs \$160,000, and the 32-port model costs \$224,000. Both are available now.

Remote option

GDC also introduced the Universal Access System (UAS) 7000, which supports high-speed LAN interconnection or Internet access over standard copper telephone lines. Using well-established High bit rate Digital Subscriber Line technology for transmitting data over a single pair of copper wires, UAS 7000 can deliver up to 1,168K bit/sec in both directions, slightly less than a T-1 circuit.

However, the device can also support smaller bandwidth and concentrate that traffic onto a standard T-1 interface to a network backbone switch, for example. That interface will ship next month.

GDC in mid-1997 will introduce an Asymmetric Digital Subscriber Line (ADSL) version of the device, which will support a larger downstream data flow. ADSL technology is still evolving, but trials have proved that 6M bit/sec downstream and 640K bit/sec upstream can be reliably achieved.

The price of the UAS 7000 is \$6,890.

©GDC: (203) 574-1118

ATM STANDARDS READY, SET, GO!

FORE

ATM Forum Standards Matrix

Feature	DEFINED	FORE Compliant
LAN Emulation 1.0		
LAN Emulation Server (LES), LAN Emulation Client (LEC)	✓	YES
LAN Emulation Configuration Server (LECS), Broadcast Unknown Server (BUS)	✓	YES
Classical IP		
Address Registration	✓	YES
Address Resolution	✓	YES
UNI 3.X Signaling, IISIP Routing		
Switched Virtual Circuits (SVCs)	✓	YES
Point-to-point	✓	YES
Point-to-multipoint	✓	YES
OSI NSAP Address	✓	YES
DCC ATM Format	✓	YES
ICD ATM Format	✓	YES
E.164 ATM Format	✓	YES
Signaling AAL (including SSCF, SSCOP)	✓	YES
Public UNI	✓	YES
PNNI		
Physical Layer Interfaces		
OC-3c/STM-1 SONET/SDH @ 155.52 Mbps, Fiber	✓	YES
STS-3c/STM-1 SONET/SDH @ 155.52 Mbps, UTP-5	✓	YES
DS3 @ 44.736 Mbps	✓	YES
TAXI (4B/5B) @ 100 Mbps	✓	YES
E3 @ 34.368 Mbps	✓	YES
DS1 (T1) @ 1.544 Mbps	✓	YES
E1 @ 2.048 Mbps	✓	YES
J2 @ 6.312 Mbps	✓	YES
OC-12c/STM-4c SONET/SDH @ 622.08 Mbps, Fiber	✓	YES
TP25 @ 25.6 Mbps	✓	YES
ATM Layer Specifications		
ATM Layer Functions Involved at the UNI (U-plane)	✓	YES
Setting of Cell Loss Priority (CLP) bit (Tagging)	✓	YES
UPC Policing (including Dual Leaky Buckets)	✓	YES
Selective Cell Discard (CLP=1 Discard)	✓	YES
EFCI Flow Control Support	✓	YES
ILMI Specification		
MIB Support	✓	YES
Address Registration	✓	YES

As a network manager, you need to know two things about ATM standards.

First, ATM standards are continuously evolving to keep pace with the development of new ATM network feature enhancements. Evolving standards are a fact of life for any healthy technology, whether it's ATM or others that have gone before it, such as IP.

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These standards are firm, and so is FORE's compliance with them—as detailed in this checklist for our *ForeThought™* 4.0 Internetworking Software. What's more, FORE goes the extra step by offering the value-added features that allow you to build an even more robust ATM internetwork—today. Without a forklift upgrade.

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To obtain a copy of the standards checklist, future standards updates and a free copy of, "A Guide to ATM Data Networking", contact us at 1-888-404-0444.

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NetworkWorld

TECHNICAL SEMINARS

Essentials of Networking and Data Communications Technologies and Their Practical Application

Networks and communications systems are evolving with ever-increasing speed. Network technology options are broad in range, complex in nature and ultimately confusing. Interconnectivity is by no means a trivial issue and interoperability is still difficult to achieve.

Essentials of Networking and Data Communications is a dynamic, fast-paced, plain-English, common-sense and thoroughly understandable explanation of current and developing network technologies and communications systems. Acronyms are decoded, technologies are demystified, standards are put in perspective, and regulatory issues and trends are explained. The present and future "Networked World" is set in the context of meaningful and cost-effective business applications.

12 BENEFITS OF ATTENDING THIS SEMINAR . . .

1. Gain a comprehensive understanding of networking and data communications
2. Understand the fundamentals of transmission systems from analog to digital, from twisted pair through fiber optics and from wired through wireless
3. Gain a thorough understanding of LANs and LAN internetworking technologies, solutions and issues
4. Comprehend the basics of data communications protocols: line set-up, coding schemes, asynchronous vs. synchronous, error detection and correction
5. Understand the evolution of data networking, from DDS and X.25, through T/E-Carrier, ISDN, SMDS, Frame Relay, ATM and B-ISDN
6. Differentiate between bridges, routers, brouters and gateways — what they do and where they fit
7. Learn the nature of current and developing infrastructure technologies, including ADSL, HDSL, SONET, Wireless Local Loop (WLL) and hybrid local loops
8. Understand the differences between circuit, packet, frame and cell switching
9. Develop an informed and meaningful strategy for the transition to Broadband Networking through SMDS, Frame Relay and ATM
10. Compare and contrast the options for wireless data networking in the LAN, MAN and WAN domains
11. Develop a sense of carrier options — LECs, CAPs/AAVs and IXC's — as well as technology alternatives
12. Develop an informed and meaningful strategy for the deployment of emerging technologies, in the context of meaningful business applications

Whether you are seeking a firm foundation of networking knowledge or require a comprehensive update of current trends, this invaluable seminar will meet your networking and data communication knowledge needs by providing you with insights and a big-picture perspective of the fast-paced networking industry.

Developed and directed by Ray Horak, an internationally acclaimed network consultant, author and lecturer, this two-day seminar is informative and entertaining. Interactive case studies are interwoven throughout the day to illustrate the meaningful application of critical technologies presented.

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Carrier Services

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Briefs

■ **Californians just can't keep their hands off new telephone numbers it seems.** State regulators announced they are prepared to hold **lotteries** to determine which carriers will

RUNNING OUT

Prefixes remaining in affected California area codes are limited.

Area code	Numbers left
310 (Los Angeles)	53
619 (San Diego)	57
415 (San Francisco)	120

There are 792 prefixes in an area code, 10,000 numbers in a prefix.

receive the dwindling stock of numbers in area codes 619 (San Diego), 310 (Los Angeles) and 415 (San Francisco). New area codes for these regions are not due until late 1997 and early 1998. The lottery system will assign the remaining 10,000-block prefixes to new local carriers guaranteed a fair share of the numbers.

■ **LDDS WorldCom** said it is rolling out a suite of **Internet services** for commercial customers integrated with long-distance services. The package includes dedicated channelized T-1 local access, dedicated Internet access at speeds from 56K bit/sec to T-1 and optional equipment, in addition to long-distance voice and data services.

■ **Infonet Services Corp.** has expanded its network services in the U.S. to provide **remote access** customers with 28.8K bit/sec local dial access in about 1,650 cities. The firm said it is also offering dedicated Internet access at speeds up to 45M bit/sec from about 150 U.S. metropolitan areas.

■ **MCI Systemhouse**, an outsourcing unit of MCI Communications Corp., signed a 5 1/2-year outsourcing contract to provide **applications maintenance** services to Cadence Design Systems, Inc., a supplier of electronic design software and services. All affected employees of San Jose, Calif.-based Cadence will join MCI Systemhouse.

Wireless carriers reach out and find someone

User location systems could be springboard for new services.

By Joanie Wexler
San Francisco

When the FCC decided that wireless carriers must provide 911 services by the end of this year, it probably had no idea that it could change the whole wireless pricing and services landscape.

As a result of the Federal Communications Commission mandate, a trio of vendors has announced a wireless location system, which, when installed in a wireless carrier's network, gives the net operator the ability to pinpoint exactly where individual users are. It will be used first as the safety measure the FCC ordered last June.

But gaining the ability to know exactly where users are allows carriers to launch new services, such as customized calling plans that save users money or new emergency road and health care services.

At the mobbed PCS '96 show here recently, Tandem Computers, Inc., with partners SignalSoft Corp. and SCC Communications Corp., described the system. The platform — and others like it from competing vendors — will let wireless service providers identify a wireless 911 call the way an operator can now see a caller's address on a monitor when a 911 call arrives over a landline net.

But the platform, which will be available in April from Tandem for Time Division Multiple Access and GSM networks, can also be used by carriers to provide other, more customized services, some of which are being tested now, Tandem and SignalSoft officials said.

For example, with a carrier able to tell exactly where a caller is, users might be able to strike deals where they could choose a few locations and have those calls billed at the standard wireline rate, with wireless rates in force elsewhere, said Curtis Steinhoff, director of marketing communications/operations, telecom marketing, at Tandem.

This could cut costs dramatically for big wireless user popula-

tions, such as sales forces. "Users should push [carriers] for location-sensitive services like these," Steinhoff advised.

This type of differentiation is going to be important among wireless carriers now that personal communications services networks could boost the number of wireless carriers in a given territory to six, compared with today's two cellular providers, said Andrew Seybold, a wireless consultant and publisher of the "Outlook on Computing" newsletter in Boulder Creek, Calif.

"Wireless location services in general make a lot of sense" to enable new road services from automobile clubs and medical emergency groups, he said.

The platform also allows real-time billing: Users can check on

VENDORS BUSY AT PCS '96

- ▶ IBM said it is outfitting more vendors' ruggedized computers with its CDPD, ARDIS and RAM radios. The company has added Itronix laptops to its arsenal, and plans to ship versions with the three WAN radios in December and with LAN radios in January. Prices will be about \$5,800. Next month, IBM will ship Norand pen-based handhelds with the radios for between \$2,000 and \$5,000.
- ▶ IBM also said it has teamed with Motorola and Ameritech Cellular Services to bundle remote access services for Lotus Notes. Remote users of Lotus Notes can get an integrated bundle of an IBM-branded notebook computer, Motorola AirMobile middleware and Ameritech wireless services, rather than putting together the pieces themselves. Users can buy the bundle from any of the three suppliers.
- ▶ US WEST Communications said it has made its "500" phone number database available nationwide to service providers wishing to offer subscribers phone numbers that are not bound to a geographic location.
- ▶ GTE and Lucent Technologies demonstrated the industry's first cross-spectrum Code Division Multiple Access (CDMA) phone call. The call connected GTE's 850-MHz CDMA net in California with Centennial Cellular's 1.8-GHz PCS system in Puerto Rico. Analysts at the show said it looks like CDMA, which has fallen under criticism for having development problems, will be a go. But it remains to be seen how it will perform in large networks outside the laboratory.

—Joanie Wexler

how much they have rung up in charges so far in a given month. Network managers can rig it so that once a ceiling for charges has been reached, the phone shuts off.

This might help network managers contain costs and make them willing to deploy wireless devices to more users,

said Steve Sazegari, managing director at Tele-Mac, a consulting firm in Foster City, Calif.

SignalSoft developed the wireless location system application for Tandem's and Motorola, Inc.'s home location register platforms. SCC provides the 911 call-routing system and database platform. ■

PacBell wiring up ADSL, end-of-year deals

By Joanie Wexler
San Diego

Pacific Bell is hard at work spending new parent SBC Communications, Inc.'s money. It has already put the funds to use to craft new high-capacity access services and finance end-of-year promotions on existing network offerings.

Asymmetric Digital Subscriber Line (ADSL) services will begin rolling out the door in about six months, said Robert Lee, president of Pacific Bell Business Communications Services.

The company "is in high gear because of competition," Lee said at the recent TCA '96, the annual conference of the Information Technology and Telecommunications Association.

Lee said, for example, that the company is currently testing ADSL and plans to use it to deliver voice and data services at T-1 speed to homes in California during the first half of 1997. "We're still laying fiber but only

in concentrated areas," Lee said. "We believe we still can leverage that huge copper [wiring] infrastructure for high-speed networking."

High-capacity access options such as ADSL are especially important in California,

which carries the largest portion of Internet traffic in the country and also houses one of the country's largest populations of telecommuters. Pacific Bell has already seen an increase in ISDN revenues of 118% over last year, Lee said.

Ameritech Corp., US WEST, Inc. and GTE Corp. are also conducting ADSL trials on parts of their networks, but few service deployment plans have been announced. US WEST is said to be planning limited commercial services for early 1997.

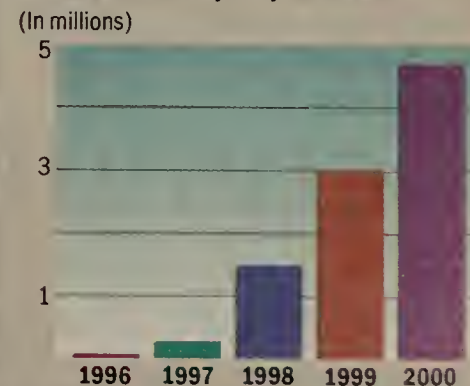
Pacific Bell will also hold a Christmas sale on Centrex, dedi-

cated Internet access services, 800 and voice mail services, whereby "we will waive some installation and monthly recurring charges. We need to move at a higher clip with our revenue performance," Lee said.

These promotions could nab long-term customers. "It's a way

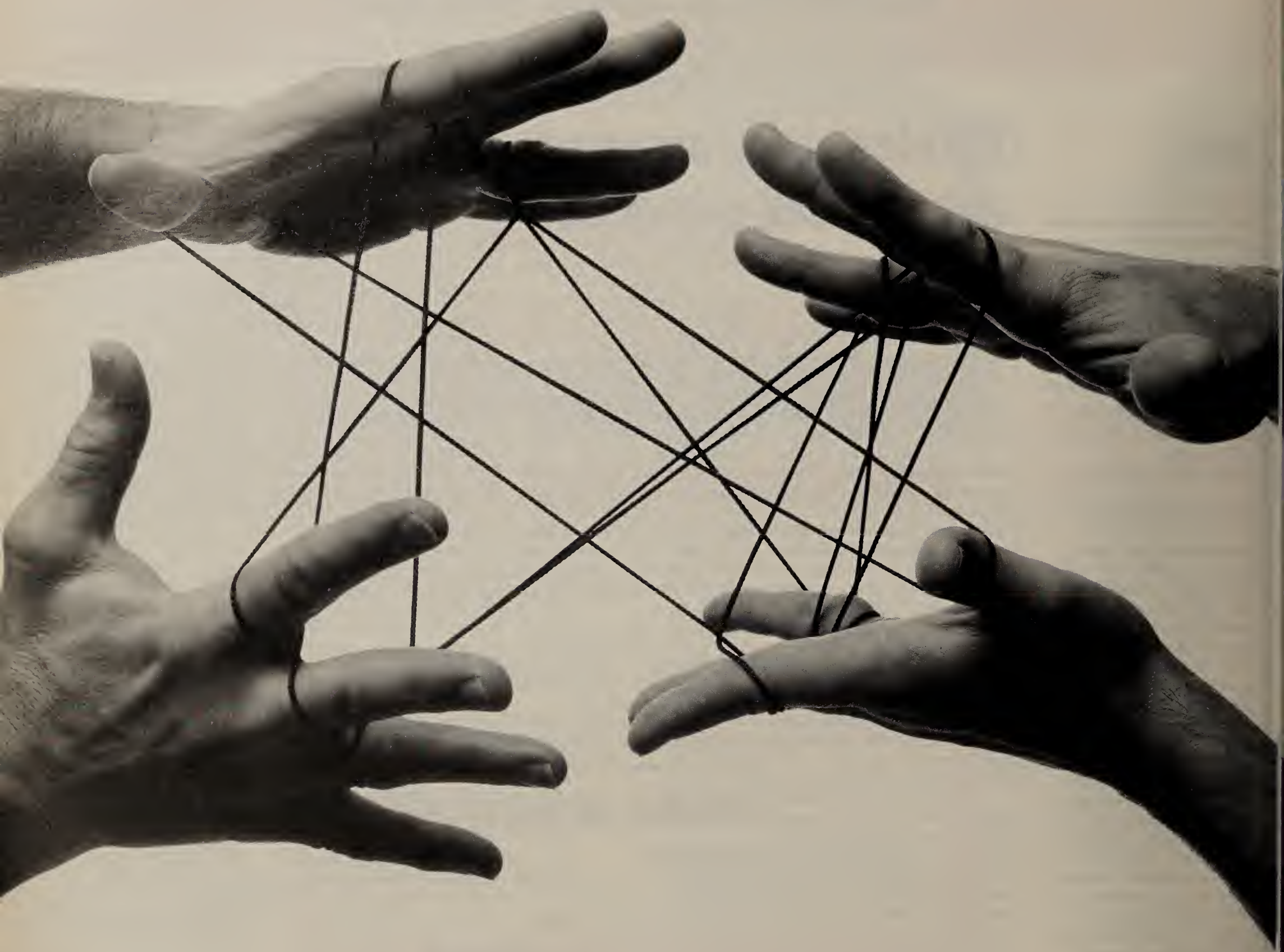
ADSL TO THE MILLENNIUM

Projections for number of ADSL lines in North America by the year 2000.



SOURCE: TELECHOICE, VERONA, N.J.

to lock in a customer, then make it hard for him to leave," said John Gershawek, telecom manager at the State Fund of California in San Francisco. ■



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LAN World

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Briefs

■ **Dell Computer Corp.** has slashed prices by up to 44% on its entire line of Pentium-based **PowerEdge network servers**. A PowerEdge XE server, for example, with two 166-MHz Pentium processors, three 4G-byte SCSI drives and 512M bytes of ECC memory has been reduced from \$25,298 to \$14,999. The move comes on the heels of Dell's introduction of a competitively priced line of Pentium Pro servers earlier this month.

Dell: (800) 289-3355.

■ **Hewlett-Packard Co.** earlier this month announced management capabilities for its **PowerWise UPS** units using a Web browser. PowerWise assistance for the Web lets network managers access, monitor and configure the universal power supply from any location with a Web browser, providing real-time views of power problems and performance. PowerWise assistance for the Web comes bundled free with all PowerWise UPS units. Existing PowerWise customers can download the software from HP's Web site (www.hp.com).

HP: (415) 857-1501.

■ **Qualix Group, Inc.** last week announced the acquisition of **Octopus Technologies, Inc.**, a Yardley, Pa.-based manufacturer of backup and disaster recovery software for Windows NT and Windows 95. The acquisition will allow Qualix to extend its Unix-oriented suite of data



protection and availability products to the NT platform. Octopus' Automatic Switch Over technology lets targeted NT systems with mirrored data immediately assume the role of failed systems without human intervention.

Qualix: (415) 572-0200.

NCR: Eight Pentium Pros are better than four

The company's Octascale architecture is at the heart of new 4300 servers designed to run Unix or Windows NT.

By John Robinson
San Diego

NCR Corp. today will announce the first product to utilize the company's Octascale controller, which allows a server to support

eight rather than four Pentium Pro processors.

While Intel Corp. offers four-processor Pentium Pro cards that server vendors can use to build machines, NCR has come to the conclusion that many customers need more than four processors to run their applications.

The WorldMark 4300 initially will be released with four 166-MHz or 200-MHz Pentium Pros, but it will be upgradable in the field to eight processors by early next

year, simply by adding a circuit board with four more processors. The mid-range server runs Unix or Windows NT and could be used as a high-availability transaction processing or data warehousing machine.

Customers will be able to cluster as many as three symmetric multiprocessing (SMP) 4300s running Windows NT or up to eight 4300s running Unix.

"We have designed it for scalability because that's what customers want," said Subo Guha, product line manager for departmental servers at NCR. "As NT expands... users can add more

processors," he said, referring to Microsoft Corp.'s ongoing work to make NT work on machines with more processors.

With the 4300, NCR is trying to supplant scalable coherent interface-based solutions, which make it possible to cluster two or more four-processor SMP servers but waste money by duplicating hardware, the company said.

Competing with Reduced Instruction Set Computing-based mid-range servers, the 4300, announced today at NCR's annual Partners User Group Conference here, also includes dual peer PCI buses each running at 132M bit/sec and dual fast/wide SCSI adapters.



High-speed LANs

Gigabit Ethernet group gains momentum

New alliance members include IBM, FORE, Acacia, Ornet and Ancor.

By Jodi Cohen
Atlanta

If Gigabit Ethernet is anything, it's fast. And so, too, has been the membership growth of the group pushing the 1 Gbit/sec technology.

Just a few months ago, the Gigabit Ethernet Alliance did not even exist. Now the group boasts a total of 74 companies, with just about every key network vendor backing the speedy LAN backbone alternative.

As expected, ATM proponents FORE Systems, Inc. and IBM were just two of the 24 companies that joined the group at the recent NetWorld+Interop 96 show here (NW, Sept. 16, page 1).

Other additions included Acacia Networks, Inc., Ancor Communications, Inc., Fibronics International, Inc., Emulex Corp., Ornet Data Communications, Inc. and Amdahl Corp.

"The rapid membership growth demonstrates that large and small companies alike believe Gigabit Ethernet is emerging as a key LAN technology," said Tony Lee, chairman of the Gigabit Ethernet Alliance. "Gigabit Ethernet is generating

a lot of interest because of its simplicity, reliability, backward compatibility and cost-effectiveness."

Tam Dell'Oro, founder of the Dell'Oro Group, a consultancy based in Portola Valley,

Calif., agreed. "Customers that we talked to in a recent survey said that reliability, interoperability and speed are the top three factors when evaluating Gigabit Ethernet," she said. Less important considerations are price and the technology's ability to scale, Dell'Oro said.

Gigabit Ethernet is expected to be deployed in campus backbone environments to link switches aggregating multiple 10M and 100M bit/sec Ethernet segments.

Customers are also planning to use Gigabit Ethernet for server connections, analysts said.

Gigabit Ethernet vs. ATM

The technology will most likely compete head-on with ATM in the LAN. ATM's benefits over Gigabit Ethernet include quality of service capabilities, scalability, LAN/WAN integration as well as multimedia support, industry observers pointed out.

However, according to Dell'Oro, many customers anticipate Gigabit Ethernet and LAN ATM coexisting.

Pricing for Gigabit Ethernet gear is expected to be between \$2,000 and \$3,000 per port, about two to three times as much as 100M bit/sec Ethernet switches and about the same as ATM switches.

The Gigabit Ethernet standard, which is being developed by the IEEE 802.3z task force, is expected to be completed in early 1998.

©Gigabit Ethernet Alliance: (408) 241-8904.

GAGA FOR GIGABIT ETHERNET
More than 80% of end users and almost 90% of network integrators indicated in a recent survey that they would evaluate Gigabit Ethernet products. The survey of 40 end users and 90 network integrators was conducted by the Dell'Oro Group consultancy in Portola Valley, Calif.



The Worldmark 4300 packs eight Pentium Pro processors in one box.

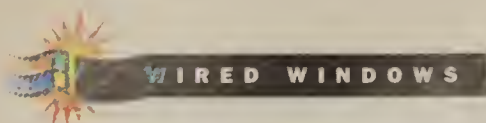
Other features include:

- 2G to 4G bytes of RAM, upgradable to 8G bytes
- 12 hot-pluggable internal disks
- Redundant and hot-pluggable powersupplies
- Six PCI and EISA slots, with future support for 14 PCI slots
- An internal uninterruptible power supply.

More servers utilizing the Octascale controller are expected next year as the result of an agreement between Intel and NCR to incorporate the technology into future products.

The WorldMark 4300 is available now in the one- to four-processor NT or Unix versions. Prices range from \$17,500 for a single-processor system to about \$100,000 for a four-processor system.

©NCR: (513) 297-5700.



Getting a grip on mixed NOS nets and servers

Microsoft Corp. and Hewlett-Packard Co. surprised quite a few people last week when they signed an agreement that will eventually result in the integration of

their management products, OpenView and Systems Management Server (SMS), respectively.

This comes at the same time as Novell, Inc.'s release of a ManageWise client for

Windows NT. Novell finally appears to have recognized there just might be an NT server in your NetWare enterprise after all. Evidently, the millennium is coming — and fast.

It looks as if, within a relatively short time, you'll be able to manage all of your servers — IntranetWare, Windows NT and Unix — from one console. The surprising part, though, is that you'll be able to choose among a number of different consoles.

The Microsoft-HP announcement is especially intriguing because these two companies haven't shown a great amount of cooperation in the past, with the exception of HP printer drivers for Microsoft operating systems and applications. Microsoft's usual Unix partner is Digital Equipment Corp., whereas HP tends most often to be found in the Novell camp.

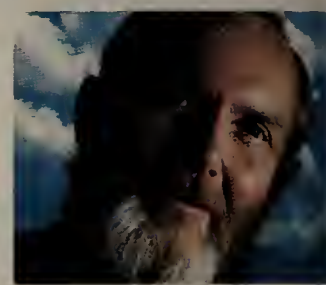
HP and Microsoft will integrate the next versions of HP OpenView IT/Administration and HP OpenView IT/Operations with SMS. As a result, OpenView operators will be able to use SMS' distributed services to manage PCs.

In particular, OpenView operators will be able to use information from SMS to plan desktop and Windows NT Server configuration changes and use the Microsoft tool to execute those changes at a convenient time. Operators using OpenView as the enterprise manager will be able to access the SMS relational database to explore the hierarchy of systems and retrieve inventory records.

When SMS detects problems, new IT/Operations templates will notify an OpenView operator with a detailed message describing the problem and suggesting appropriate corrective action. Look for this to be available in about six months.

During the coming months, HP also plans to release full Windows NT-based versions of HP OpenView Network Node Manager, OmniBack II and PerfView/MeasureWave. It's taken a while, but the era of being able to manage mixed NetWare, NT and Unix environments appears to be upon us.

Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at dkearns@msn.com.



Dave Kearns



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Tip of the week

Microsoft has released the Internet Explorer Administration Kit 3.0, which lets you do the following: customize the look of the Internet Explorer Web browser with a company name or logo; create a single, one-click installation package of all Microsoft Internet Explorer components, including the NetMeeting conferencing software and Internet Mail; and preconfigure and control options for users within your enterprise. Although the kit isn't downloadable, it is free (except for shipping charges). Order your copy from Microsoft's Web site (<http://www.microsoft.com/ie/ieak/>).

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LeeMah asks LAN users: What's the password?

The company's authentication software works with popular remote access servers to verify a user's identity.

By Ellen Messmer
Hayward, Calif.

LeeMah DataCom Security Corp. has rolled out an authentication server that checks the identity of anyone trying to

access LAN resources by requiring a dynamic password.

LeeMah's SafeAccess Server challenges anyone trying to access the LAN by requiring that the user enter a variable

password generated by any of the three types of authentication tokens LeeMah produces: InfoCard II, SafeConnect PCMCIA II and internal/external modems with embedded SafeAccess

Server algorithms.

The tokens are palm-sized computers that generate numbers based on encryption algorithms. If the user enters a digit stream the SafeAccess Server considers to be the correct answer, the user is given LAN access.

"The new authentication server works behind any remote access server, like Shiva [Corp.'s], that uses the TACACS or Radius authentication protocols," said Bryan Keeter, director of marketing at LeeMah DataCom.

The SafeAccess Server can monitor every access server connected to an organization's WAN from a single Windows NT or Windows 95 workstation.

Not only does it track remote access attempts, but it also creates an audit trail to monitor the duration of calls.

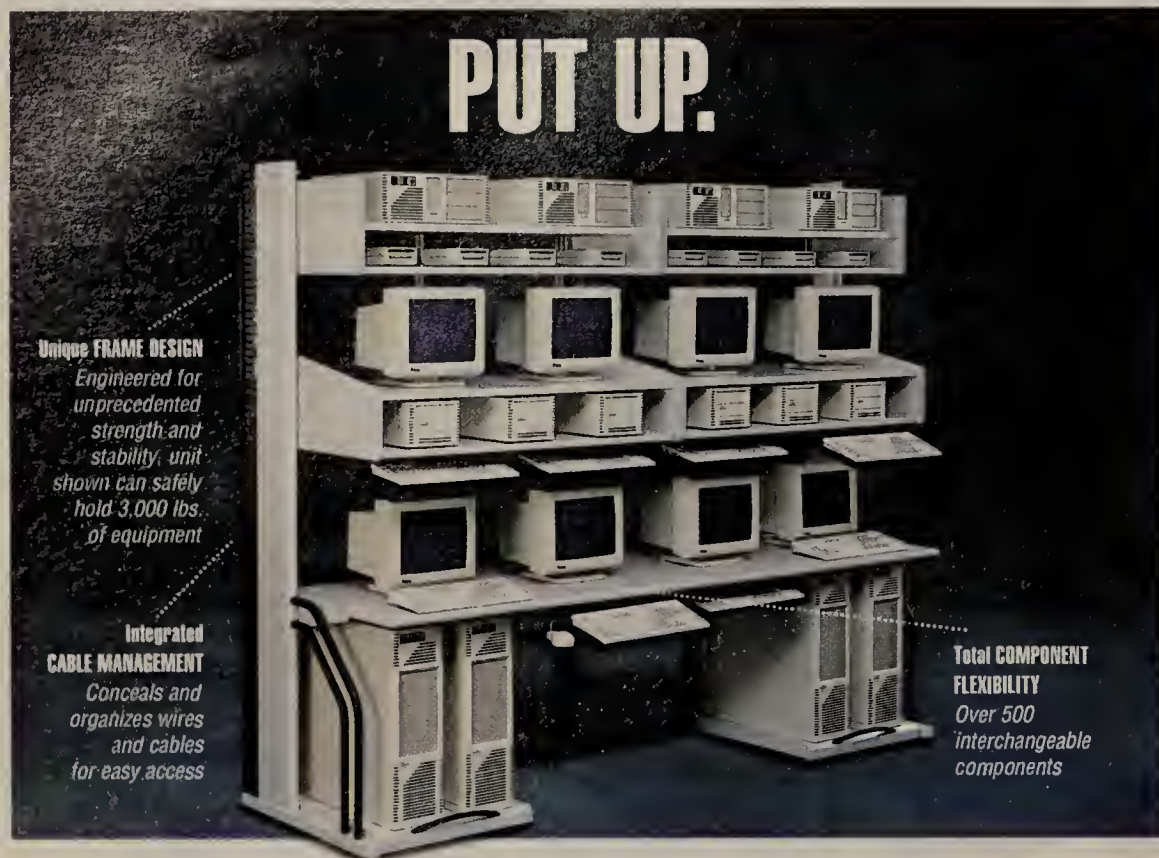
SafeAccess Server costs \$2,300 and is available now.

Get on the BandWagon

Separately, LeeMah officials said the company has enhanced its ISDN and asynchronous remote access server, dubbed BandWagon.

The server can now be set up more easily through an autoloader via LeeMah's WinRAS Server management tool.

©LeeMah: (510) 608-0600.

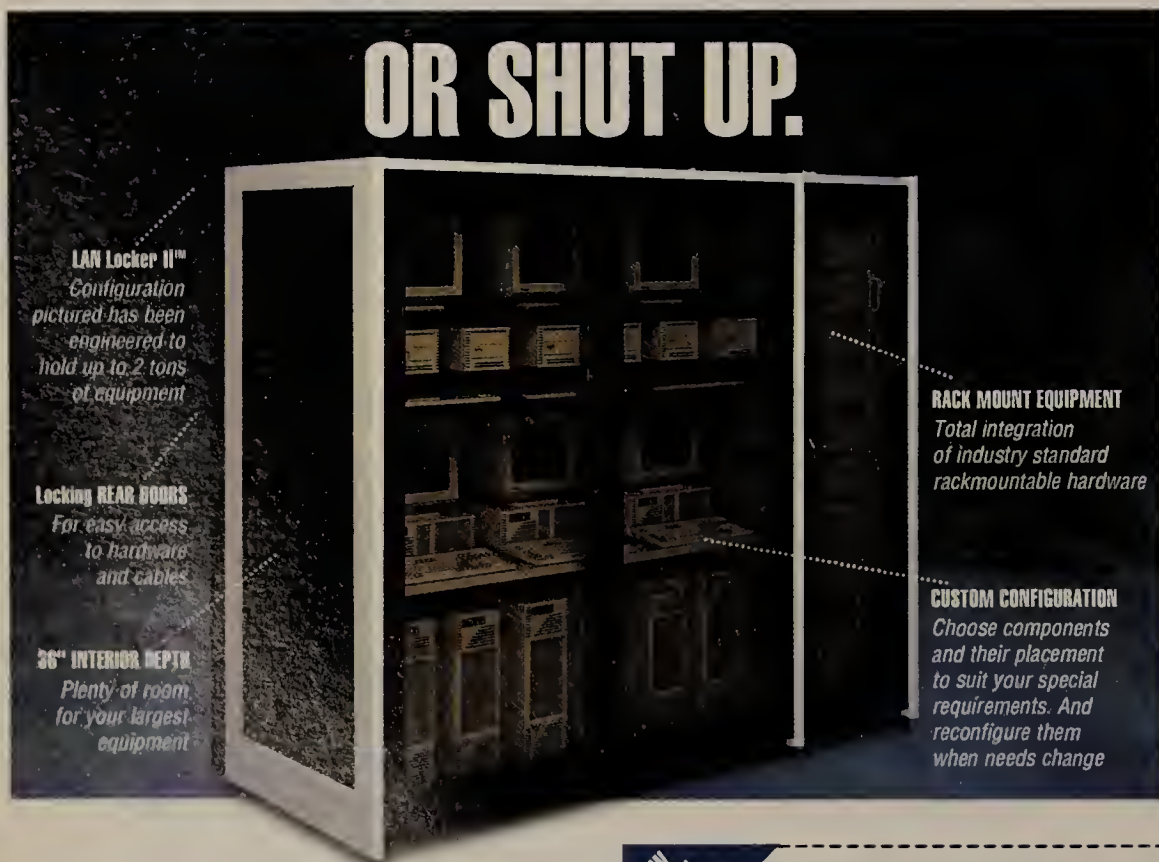


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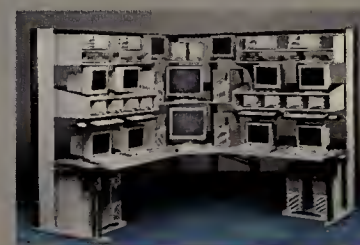
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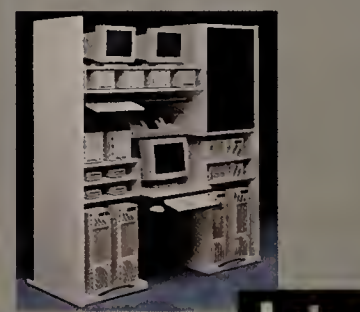


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Microsoft, Intel plan to port WinNT to Merced

Next-generation processor will run both 32- and 64-bit applications.

By Ed Golden

Microsoft Corp. and Intel Corp. have announced that they will develop a version of Windows NT for Intel's forthcoming 64-bit Merced processor, although no one from either company would say with certainty when it would become available.

"It's too far out to say when or how NT will be synched" with Merced, said Jim Allchin, vice president of Microsoft's desktop and business systems division.

Steve Smith, vice president of Intel's processing operation in Santa Clara, Calif., said the aim is to offer compatibility, scalability and performance in the new Merced processor.

"It's in development," he said. "It's several years out, but I can't say just when it will be available."

The first version of Merced is generally expected in 1998, with subsequent versions coming out later that year or in 1999.

The combination of Windows NT and Intel's processor will provide seamless support for existing Pentium Pro 32-bit applications and for applications yet to be written for Merced's IA-64 instruction set, Intel officials said.

Golden is a correspondent at IDG News Service's Boston bureau.

Client/Server Applications

Covering: Databases • Messaging • Groupware
Conferencing • Imaging • Multimedia • Development

Briefs

■ **TVObjects Corp.** in Princeton, N.J., has released an add-on program for Microsoft Corp.'s Visual Basic 4.0 that lets Visual Basic developers create Java applets. With Applet Designer, developers



graphically lay out the applet, and the software generates the necessary Visual Basic and native Java code.

The company also released another add-on, VBnet 3.0, for giving Visual Basic applications Web front ends. VBnet supports HTML 3.2, generates JavaScript and VBScript and supports browsers from Microsoft and Netscape Communications Corp.

Applet Designer 1.0 is available now for \$97. VBnet 3.0 is also available now and costs \$197.

TVObjects: (609) 514-1444.

■ **Park City Group** in Park City, Utah, this week will release an E-mail coordinator for its ActionManager product line. ActionManager is a set of applications for automating a wide range of business activities, such as hiring, information management and labor resource management.

The new Action Gatekeeper funnels all E-mail messages through a tailored set of business rules that control, direct and schedule E-mail activity among designated user groups and organizations over enterprise networks.

The application will be released in October and is priced at \$6,000.

Park City: (801) 645-2105.

■ **Percussion Software, Inc.** in Stoneham, Mass., is shipping a version of its data integration tool for Lotus Development Corp. Notes that now supports Lotus' Domino, Sun Solaris, Informix Software, Inc.'s OnLine Dynamic Server and IBM's Application System/400 database.

The new version also adds support for field-level replication. It is priced at \$7,500.

Percussion: (800) 283-0800.

Electronic messaging

E-mail gateway provider branches off

Innosoft looks to cash in on Internet popularity by adding support for Notes, PROFS and SNADS systems.

By Barb Cole

West Covina, Calif.

Innosoft International, Inc., a longtime provider of software for linking E-mail systems to Simple Mail Transfer Protocol backbones, is looking to capitalize on the newfound popularity of Internet mail.

The company this week will roll out an upgrade of its flagship software that works with more

Interconnect adds support for Lotus Development Corp. Notes as well as IBM Systems Network Architecture Distribution Services (SNADS) and Professional Office System (PROFS) mail systems. The product already supports Digital Equipment Corp.'s All-in-1, Lotus' cc:Mail, Microsoft Corp.'s Mail, Novell, Inc.'s GroupWise and assorted Message Handling Service (MHS)-based mail systems.

Innosoft has been offering standards-based mail connectivity software for a decade, but its offerings previously ran only on Digital operating systems. Last month, the company began shipping its software on Sun Solaris, and a Windows NT port is

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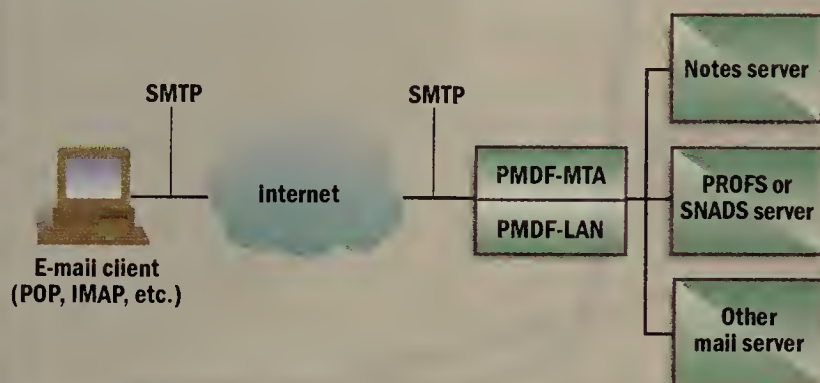
Version 5.1 of PMDF E-mail

planned.

"They have really opened up their horizons," said Joyce Graff, an analyst at Gartner Group, Inc.

E-MAIL BONDING WITH INNOISOFT

Innosoft's PMDF E-mail Interconnect 5.1, which includes a Message Transfer Agent (MTA) and LAN E-mail connectivity software, gives Internet clients access to a variety of servers via SMTP. The product now supports Notes, PROFS and SNADS.



in Burlington, Mass. Unlike many mail gateway providers that have proprietary offerings and are now trying to embrace 'Net standards, Innosoft is well positioned with its SMTP roots, she said.

PMDF E-mail Interconnect is a software suite that includes

Post Office Protocol (POP) and Internet Mail Access Protocol (IMAP) servers, and may be used to integrate disparate mail systems as well as X.400 services, fax machines and pagers.

The new version is more scalable and easier to maintain, according to Dean Hidalgo, marketing manager at Innosoft. A new server management facility, called the PMDF Multithreaded Service Dispatcher, can manage several multithreaded SMTP, POP and IMAP servers; previously, multiple servers could not be managed from a central point.

In addition, the POP and IMAP servers now support multiple threads, which will allow the servers to support large numbers of E-mail clients. The new version also supports the Notary Internet specification for notification of delivery and nondelivery status.

Customers reacted favorably to Innosoft's plans.

"We're exploring the [Innosoft] Notes [add-on] because our existing Notes SMTP gateway has some problems," said Sam McBride, senior systems programmer at Duke University Medical Center in Durham, N.C., which uses PMDF to connect several mail systems.

Version 5.1, shipping now, runs on Solaris, Digital Unix and OpenVMS. Pricing ranges from \$6,000 to \$15,000 per server.

©Innosoft: (818) 919-3600.

Firm makes 'Progress' toward Internet-enabled transactions

By John Cox

Bedford, Mass.

Progress Software Corp. last week unveiled WebSpeed, a set of tools for building Internet applications that can run transaction systems such as order entry, inventory and customer problem resolution.

These applications are the next World-Wide Web frontier because they allow new and potentially large audiences to participate directly, via a Web browser, in a company's core business processes. Today, most Web applications simply read HTML files on a Web server or, in some instances, read records in a database server.

"If you allow the end user to be the primary inputter of data, you need to bring [transactional] robustness to the Web front end," said Mark Karaman, chief Web technologist for Pro-

tech Systems, Inc., a Medford, N.J., consulting company that has been working with early versions of WebSpeed for months. "WebSpeed lets you bring the business logic to the Web interface and validate it," Karaman

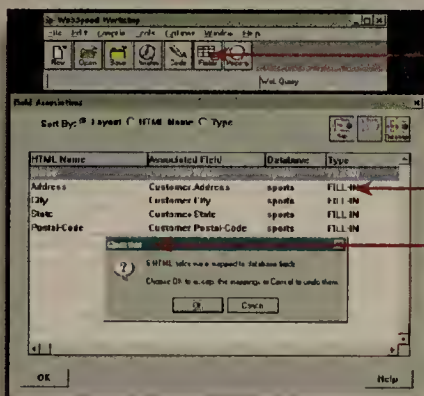
said.

WebSpeed takes the same conceptual approach as a growing number of other vendors but has some key differences. Typically, these products have in common a graphical development environment, a server that manages transactions, middleware and an interface to the Web server.

WebSpeed Workshop is the
See Progress, page 32

WEBSPEED FOR WEB TRANSACTIONS

The WebSpeed graphical tool set is a 4GL environment for building transaction-oriented applications that have Web browsers as clients. The application logic, written in the Progress 4GL, executes on servers.



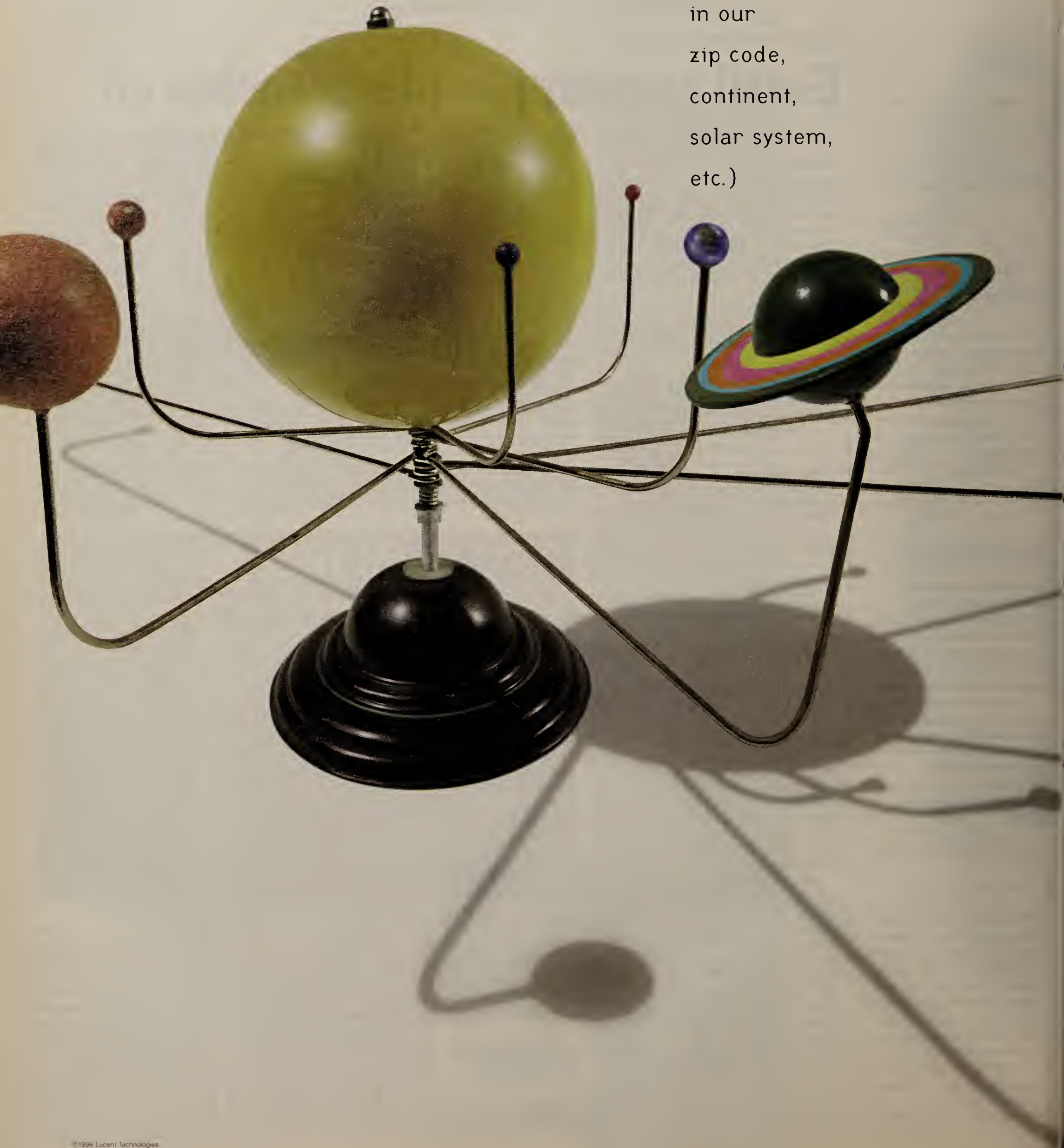
1. This button brings up a screen to associate fields in an HTML page with databases.

2. A developer uses a mouse or an automatic mapper to match HTML fields with specific database tables and field names.

3. When finished, the developer writes logic in 4GL, compiles application and deploys it on WebSpeed server.

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SHARED LOGIC

Getting your E-mail backbone up and running

Effective groupware and workflow systems will separate winning companies from losing companies in the '90s. But first, companies must deploy a robust messaging backbone. The concept of a messaging backbone, however, is often poorly defined.

Today's best messaging backbone products have two tiers: a server tier that supports popular E-mail clients and a backbone switching tier that offers coexistence with legacy systems.

The best messaging servers support today's best-of-breed Messaging Application Programming Interface (MAPI) and Post Office Protocol 3 (POP3) clients, and have Internet Mail Access Protocol 4 (IMAP4) and Lightweight Directory Access Protocol (LDAP) interfaces in development.

At the same time, the most versatile backbone switches support legacy mail systems such as IBM's Professional Office System (PROFS), Digital Equipment Corp.'s All-in-1 and Microsoft Corp.'s

Microsoft Mail through Simple Mail Transfer Protocol, X.400, gateways and directory synchronization.

In the recent past, the backbone was usually considered purely in terms of switching. The most customers could hope for was to buy a switch or gateway that would link proprietary E-mail systems at the transport level.



Daniel Blum

Today, however, many customers are focusing on open messaging servers such as Hewlett-Packard Co.'s OpenMail and Lotus Development Corp.'s Notes 4.0, which can act as backbones serving multivendor E-mail clients directly, replacing the current, difficult-to-support detritus of file sharing post offices and message routers.

Still, the need for a switching tier remains real though it is sometimes overlooked in the enthusiasm for new client/server, intranet messaging.

Users of modern groupware/workflow systems still need to send E-mail, forms and calendar invitations through the backbone to reach users in legacy

environments.

Even with the ascendancy of intranets, the switching tier won't wither away. Customers will still require the likes of system-wide management, quality of service controls, monitoring, industrial-strength security and sophisticated routing beyond what pure Internet-based solutions are capable of achieving.

"Put differently," says my colleague Ted Myer, a principal at Rapport Communication, "the only thing that will gradually drop out of the backbone equation is the need for gateway translation."

Once the distinction between the different functions of the messaging backbone is clear, a scoping decision remains. Is your existing message switching system adequate, leaving the company free to focus just on client/server intranet messaging migration? Or will you need to tackle both backbone tiers at once during your next upgrade? You also need to decide whether to buy message servers and switches from a single vendor or multiple ones.

Customers should conduct an inventory of messaging assets and liabilities, then gather a list of requirements based

on conversations with all major messaging stakeholders in the organization.

Once requirements are known, develop and execute a messaging architecture and implementation strategy for the organization. Be sure to allow a few months to work through this planning and consensus process before beginning procurement.

Every company's strategy will be somewhat different, but your basic technical architecture should involve variations on the following themes:

- Define enterprise product standards for one (or as few as possible) E-mail client and a messaging server.

- Make sure the server supports generally available MAPI, Web and POP3 clients.

- Define a transition plan for deploying the next generation of IMAP4/LDAP clients and integrating your message switching/directory synchronization facilities with an enterprise directory.

If you focus on building a robust two-tier messaging backbone infrastructure first, you may find adding intranetwide groupware/workflow as easy as putting icing on a cake.

Daniel Blum is a principal at Rapport Communication, a consultancy that focuses on messaging, groupware and electronic commerce. He can be reached at dblum@interramp.com.

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Oracle snags Datalogix for \$94 million

By Sari Kalin

Redwood Shores, Calif.

Seeking to add to its client/server applications business, Oracle Corp. will buy Datalogix International, Inc. in a cash deal valued at \$94 million, company officials announced last week.

Oracle already owns 13.4% of Datalogix, which makes process manufacturing software, said John Cingari, vice president of marketing at Datalogix. Under the deal, Oracle will buy the remainder of the company for \$81 million, or \$8 per share, he said.

Datalogix's Global Enterprise Manufacturing Management System software is

integrated with Oracle Applications, Oracle's business and financial applications suite targeted at large multinational corporations, Cingari said.

Datalogix's Computer Integrated Manufacturing for Process (CIMPRO) product line has its own integrated financials, Cingari said.

"But Oracle is very interested in looking at the CIMPRO product, and I'm sure they'll make their own evaluation in terms of how they want to move it forward," he said.

Kalin is a correspondent at IDG News Service's Boston bureau.

Progress

Continued from page 31

development environment, which uses Progress' fourth-generation language as a scripting language.

WebSpeed Transaction Server executes the applications, runs complex databases and then merges the results into the HTML pages it generates automatically. Web front-end displays can be created by any HTML authoring tool, and WebSpeed uses Common Gateway Interface, or Microsoft Corp. or Netscape Communications Corp. Web server APIs to communicate with servers.

But Progress' DataServer technology also gives the transaction server access to a wide range of client/server and legacy data sources. And WebSpeed's open architecture lets it work with any Web

server and standard Web server APIs.

Finally, on the client side, WebSpeed supports a wide range of development models including Visual Basic and ActiveX controls, and C code.

To meet surging Web traffic, the initial release of the Transaction Server includes a broker process that can create or shut down additional transaction services on multiple computers as needed, according to Karaman.

WebSpeed will ship this month. WebSpeed Workshop runs on Windows 95 and Windows NT, and is priced at \$499 per developer. WebSpeed Transaction Server runs on NT, Sun Solaris and IBM AIX.

Pricing starts at \$22,500 for 50 transaction agents. Additional agent licenses are priced at \$475, with volume discounts available.

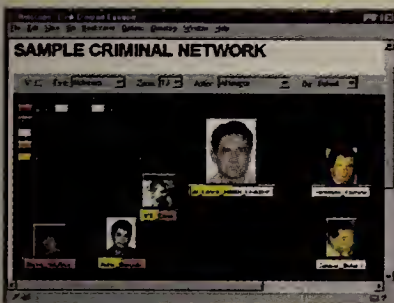
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Intranets & the 'Net

Covering: Internet Technologies and Services
for Collaboration and Electronic Commerce

Briefs

■ **Orion Scientific Systems, Inc.** next week will introduce *NetLeads*, a Java-based version of Orion's **crime-tracking** software used by law enforcement. *NetLeads* lets investigators with a Netscape Communications Corp. Navigator 3.0 Web browser



update and analyze organized-crime activity and perform automated fingerprint collection, among other tasks. The Java applets can be downloaded from the *NetLead* server.

Orion: (703) 917-6201.

■ **Northern Telecom, Inc.** said the Canadian government has chosen *Entrust*, Nortel's data security product, to provide **cryptographic** services to Canadian federal departments and agencies.

■ **CommerceNet**, an organization formed to spur **electronic commerce**, has set up its first local chapter: *CommerceNet Southeast*. It was founded by BellSouth Corp., Federal Express Corp., Harbinger Corp. and Hewlett-Packard Co., among others.

One of the first projects the group will undertake is to develop *Community of Interest Networks* for vertical industries, such as real estate. Membership fees start at \$1,500.

For more information, contact Jim Dills, executive director of *CommerceNet*, at (404) 812-5300.

■ **Livermore Software Labs** last week began shipping a version of its *Portus* network **firewall** with a new feature called *WebGate* for controlling access to Web sites or SQL databases.

Livermore Software Labs:
(713) 974-3274.

In-Site

Automakers drive private IP

Distrustful of the Internet, auto industry builds managed IP network.

By Ellen Messmer
Detroit

The auto industry is slowly moving toward its goal of building a managed IP network called the Automotive Network Exchange (ANX), aiming to have the first link in southeast Michigan by year-end.

News of the planned network leaked out a year ago (NW, Sept. 25, 1995, page 1).

Largely the effort of Ford Motor Co., Chrysler Corp. and General Motors Corp., the ANX will let the automakers' trading partners securely share data sent to the ANX connection point from a limited number of Internet service providers. These ISPs will be certified for performance and reliability.

These certified service providers (CSP) will have to agree to let a separate company, which the Big Three carmakers call the ANX Overseer, monitor and troubleshoot their IP networks and publish the reports.

The benefit to ISPs is they get on the short list of Internet providers that will eventually be mandatory in the auto industry.

Download
overviews of
X.509, key
to a planned
auto industry
IP network.

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box on the home page.



The ANX Overseer will also provide X.509 key-management services to the auto industry, issuing certifications and encryption keys to auto industry suppliers.

The leading contender for ANX Overseer, which is soon to be announced, is Bellcore, according to industry sources at the recent Automotive Industry Action Group (AIAG) meeting.

The auto industry wants to standardize on TCP/IP for sending critical electronic data inter-

change messages, E-mail and CAD/CAM file transfers, said Dennis Kirchoff, section supervisor in Ford's CAD/CAM division. But the public Internet, he added, which has suffered multiple outages of



From left to right:
AIAG's Karl Schohl; Chrysler's Robert Moskowitz; Ford's Dennis Kirchoff

late, is "basically unpredictable."

Karl Schohl, the AIAG business manager responsible for launching ANX, said the system will be designed to bring "efficient and predictable routing and minimal network congestion."

The ANX Overseer will continually measure the connected CSPs for packet loss, latency, link utilization and other metrics.

"They'll have to have disaster recovery plans," said Schohl. "We'll be flowing toward capacity as companies turn their internal



intranets out to the 'Net.'

Robert Moskowitz, Chrysler information systems technical support specialist, said ANX security plans call for network-layer encryption based on the IETF standard IP Security.

DigitalStyle product makes designing Web pages easy

Authoring tool writes new Java chapter.

By Carol Sliwa
San Diego

A new version of DigitalStyle Corp.'s *WebSuite* graphics software, due for release this week, features Java-based graphic animation and design wizards that help users create more sophisticated Web pages through a series of step-by-step prompts.

WebSuite2 works with all HTML editors, including Netscape Communications Corp.'s Navigator Gold and Microsoft Corp.'s FrontPage, to give users a greater degree of choice when they are designing their Web pages.

"The product offers a way for [chief information officers] to standardize Web page construction across a corporate intranet," said John Robb, an

Internet analyst at Forrester Research, Inc. in Cambridge. "It provides a way to easily create



With *WebSuite2* design wizards and users choose from a series of present styles to create their Web pages.

Web pages that have a common look and feel."

Because the product has been tightly integrated with FrontPage, users working in that

Many security vendors are now implementing the standard in firewalls and gateway products.

ANX will specify the Data Encryption Standard (DES) algorithm "as a minimum," said Moskowitz, acknowledging this raises export issues for Japanese and Asian suppliers due to U.S. export restrictions on the DES.

Small auto suppliers may not need firewalls but will be able to use simpler security technologies.

"Netscape's Secure Sockets Layer may be a tactical tool for the short run," Moskowitz said. "Chrysler is using it right now in some applications."

The ANX team is looking at the Secure Lightweight Directory Access protocol for reliable key retrieval. Key storage will likely be based on X.509 directories.

"The security model is probably the biggest issue bogging this down," said Frank Bowden, MCI Communications Corp.'s senior account manager of corporate national accounts.

"A lot of the auto data is sensitive — you have to make sure a CAD/CAM file for an auto engine is not tampered with, or it could be disaster." ■

Microsoft application can gain access to all the *WebSuite* design elements through the same interface.

Those using other HTML editors shift back and forth between the two applications when entering content and steering the design for their Web pages.

Among *WebSuite2*'s new features are so-called "caffeinated components" that automatically generate Java code to animate simple images on Web pages. One of the advantages of using these components is that they drastically reduce download time over animated GIFs.

WebSuite2 runs on Windows 95 and Windows NT. The standard edition, with 10 style groups, can either be downloaded from DigitalStyle's Web site (www.digitalstyle.com) or purchased from Egghead Software for \$99.

©DigitalStyle: (800) 388-7895.

Company hopes to end 'SYN' on the 'Net

By Ellen Messmer
Atlanta

An unknown attacker, using a procedure called SYN flooding, earlier this month disabled an Internet service provider by overloading its 'Net server with unwanted synchronous packets.

Though security experts have known

about SYN for some time, the assault on the ISP, ironically called Panix, raised particular concern because there is no widely recognized way to prevent this type of attack.

However, Internet Security Systems, Inc. (ISS) last week said it has been working on a method for combating SYN,

which will be included as part of a new product called RealSecure by year-end.

SYN flooding works by disrupting the normal communications handshake that takes place between two computers preparing to open a port to handle TCP/IP communications such as E-mail, telnet or File Transfer Protocol.

In normal mode, one computer sends a synchronous packet to another, which in turn sends back an acknowledg-

ment (ACK).

The first then sends its own ACK of the SYN ACK, saying "let's talk," initiating the user's communications flow.

But when SYN flooding occurs, the attacker's computer never acknowledges the attacked computer's SYN ACK. It continues to hit the computer with a flood of SYN packets.

Most computers are set on a default that lets them hold only a limited number of SYN ACK messages.

"When you reach that default, then no one else can ever start the handshake," said Patrick Taylor, ISS' marketing director. "The queue is full, and it's hard for a legitimate connection to ever get in."

The result can be a network crash.

The approach ISS has taken to the problem is to set up a real-time attack-recognition-and-response system on a separate computer in front of the TCP/IP Unix server connected to the 'Net.

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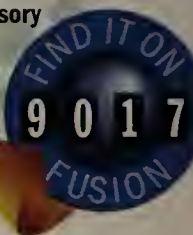
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The ISS SYN prevention software is there to sniff out the network for every incoming packet to detect a SYN flooding pattern. If SYN flooding begins, the ISS software immediately sends the Reset command to the port experiencing the flooding.

"As long as the computer resets and waits, you have the capacity to accept legitimate messages," Taylor said.

The ISS software notifies the system administrator of the SYN attack via E-mail or other means.

Users interested in testing the SYN flooding software can send E-mail to majordomo@iss.net, or they can call (770) 395-0150.

A fresh breath from CERT

The Computer Emergency Response Team (CERT), an organization based at Carnegie Mellon University that issues advisories after receiving reports of network attacks, has responded to the SYN flooding incident at Panix with its own advice. "There is, as yet, no generally accepted solution to this problem with the current IP technology," the CERT advisory admitted. However, CERT urged ISPs and corporations to install filtering software on their routers to prevent IP-spoofed packets from entering or exiting the network to reduce the likelihood of a SYN flooding attack.

CERT's advisory presents some drawbacks for mobile IP communications. Routers set up to prevent IP spoofing would halt data traffic leaving an internal intranet if it bore an originating IP packet address the router did not recognize as part of the corporate Class C group.

"A sales rep comes into a home office to send some things, and the router wouldn't let his messages file out," Taylor noted. ■

Technology Update

Keeping Up with Network Technologies and Standards

NUTTER'S NETWORK HELP DESK

Ron Nutter, a Master Certified Novell Engineer and Groupware CNE in the Lexington, Ky., area, tracks down answers to your questions. Please submit them to rnutter@world.std.com.

We'd like to connect our Novell, Inc. NetWare 4.1 server to an IBM Application System/400 that supports a token-ring LAN. Will the Systems Application Architecture (SAA) NetWare Loadable Module (NLM) work?

Via the Internet

Novell has two NLMs — NetWare for SAA and NetWare for SAA - AS/400 Edition — that provide connectivity for AS/400s. The latter is priced in user increments that closely match the needs for accessing an AS/400. It supports connectivity to an AS/400 via Ethernet, token ring, Synchronous Data Link Control, TCP/IP and other protocols.

You only need to load one protocol — Novell's IPX — on the workstation. You don't need to add IBM's SNA or integrate its LAN Support server protocol for host connectivity.

I have a few suggestions for connecting NetWare servers to AS/400s and other IBM hosts. If you have many more than 64 connections, you should try placing NetWare for SAA on its own server.

Otherwise, associated processing could hinder the server's ability to promptly respond to other user requests.

Also note NetWare for SAA's load balancing and hot standby features. The former lets you establish two gateways between the server and the AS/400. Traffic is divided between the two. Plus, if one of the gateways goes down, you still have a host connection in place.

The standby feature provides a System Fault Tolerance (SFT) III-like function that allows another box to stand in for the SAA gateway when it is down. The demands for identical hardware are not as stringent as they are for SFT-III, so try leaving Auto-config turned on on your AS/400 to allow the user's connection request to be handled as quickly as possible.

Lastly, you can save some money on AS/400-type printers by using the Hostprint/400 product.

This allows you to direct the writers (AS/400 term for print queues) on the AS/400 to a NetWare-based print queue.

Getting the most out of your firewall platform of choice

Good firewall security requires more than just a solid operating system.

By Mikel Lechner and Scott Wiegel

The Internet is like duct tape: It has a light side and a dark side, and you need to know the difference to avoid getting stuck in it. For every story of wonderful new uses of the Internet, there are just as many about information highway bandits breaking into computers and running amok.

Before the widespread interest in the Internet, most network administrators were concerned about attacks on their networks from within, perhaps from disgruntled workers. But for most organizations now connecting to the Internet, and the big business and big money moving toward electronic commerce, the motive for mischief from outside is growing rapidly and creating a major security risk to enterprise networks.

Reacting to this threat, an increasing number of network administrators are installing state-of-the-art proxy server, or application-level, firewalls as a barrier against outside attacks. These gateways provide a choke point at which security and auditing can be imposed. They allow access to resources on the Internet from within the organization while providing controlled access from the Internet to hosts inside the private network.

The growing popularity of firewalls, however, also has intensified the debate over whether Unix or Windows NT provide a more secure environment and which is better for running a firewall.

The pluses and minuses

Some consider the Windows NT NTFS file system, which is designed to recover from all types of disk errors, the most secure file system available. Others point to the stability, maturity and robustness of Unix, and say it has had more time to prove itself as well as address security issues.

Windows NT is easy to set up and manage through graphical administration tools and can be

integrated with existing hardware and software. It also offers the advantage of having a single operating system vendor — Microsoft Corp. — for desktops and servers. In addition, it's less expensive than a Unix system.

The Unix operating system is scalable, reliable and performs

available to plug these holes reasonably well in the operating systems.

NT's newness also adds an added degree of uncertainty about unknown vulnerabilities. And even though Unix is well understood, the multitude of Unix flavors makes keeping up

Failure to properly configure the operating system and implement the most up-to-date security patches and workarounds allows attackers to use tools such as Satan to probe and exploit known vulnerabilities, whether you're talking about it's Unix, Windows NT or any other operating system. And failure to physically secure servers and sensitive data leaves the network open to attack from within.

One of the best places to get security updates and advisories is the CERT Coordination Center (www.cert.org), located at Carnegie Mellon University's Software Engineering Institute. An outgrowth of the computer emergency response team formed by the Defense Advanced Research Projects Agency, CERT works with the Internet community to help it respond to security threats, raises the community's awareness of computer security issues and conducts research for improving system security.

Using a familiar operating system may be the best way to maximize security, lowering the chances for opening inadvertent security holes. And understanding that security is an ongoing and evolving process comprising many facets, of which firewalls is but one, will help network administrators achieve the maximum protection for their organizations' information systems.

Lechner is director of engineering at NEC Technologies' Internet Business Unit in San Jose, Calif., and Wiegel is chief scientist at Global Internet Access Services, Inc. in Palo Alto, Calif. They can be reached at mikel@ibu.sj.nec.com and skwiegel@gi.net, respectively.

WINDOWS NT VS. UNIX

The growing popularity of firewalls has intensified the debate over whether Unix or Windows NT provides a more secure environment and which is better for running a firewall. Here's a look at each.

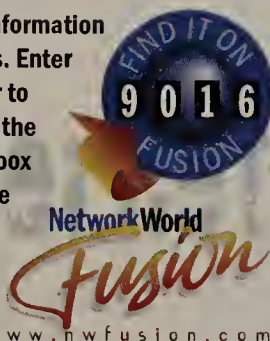
	Advantages	Disadvantages
Windows NT	<ul style="list-style-type: none">▲ Easy to set up and manage▲ Can easily be integrated into a Windows environment▲ Developed by a single vendor (Microsoft)▲ Costs less than Unix offerings	<ul style="list-style-type: none">▼ Less robust and flexible than most Unix offerings▼ Provides no way to limit unsuccessful logon attempts
Unix	<ul style="list-style-type: none">▲ Offers scalability, reliability and high performance▲ Has undergone more stress tests than Windows NT▲ Security vulnerabilities are well known▲ Virtually immune to viruses	<ul style="list-style-type: none">▼ Requires familiarity with Unix▼ Vulnerable to Sendmail hacking▼ Comes in multiple Unix versions, which can make it difficult to keep up with the latest security information

Note: This comparison assumes an application-level proxy firewall.

well. Network administrators also gain power and control through the ability to directly access and manipulate configuration database files.

However, Unix and Windows NT each has its share of security lapses and known vulnerabilities.

Get more information on firewalls. Enter the number to the right in the DocFinder box on the home page.

 <http://www.nwfusion.com>

With NT, for example, you cannot limit the number of unsuccessful logon attempts to the Administrator account. This opens it to a brute-force attack over a network. For Unix, the Internet Worm and the associated weaknesses in Sendmail represent the most notorious known vulnerabilities. However, workarounds or patches are

with the latest security information more difficult.

Beyond the technology

Network administrators need to understand the difference between having good security mechanisms and having good security. Both Unix and Windows NT have good security mechanisms. But even a casual review of the most common network security breaches reveals more human failures than technical ones.

A good firewall will maximize operating system security by proactively disabling unnecessary and potentially dangerous protocols and services. But no firewall can make up for a poorly installed and configured operating system or network service. Failing to change default passwords, reusable passwords, misconfigured anonymous File Transfer Protocol, inappropriate file and directory protections, and running vulnerable network protocols or services are among the mistakes network administrators make.

Need information?

Let *Network World* provide a quick primer on an important or emerging technology. If you have an idea for Technology Update, contact Beth Schultz by phone at (312) 283-0213 or via the Internet at bschultz@nww.com.



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EDITORIAL INSIGHTS

Rising to the challenge

The wheels are in motion. In last week's issue, I asked the CEOs of the four leading internetworking companies — Bay Networks, Inc., Cabletron Systems, Inc., Cisco Systems, Inc. and 3Com Corp. — to commit to sending a senior technical executive to a presidential style debate on the merits of their switching architectures.

My point in staging this event is to explore some of the very real differences in the switching plans of these vendors — differences that are often lost in the marketing wars. I want network managers and analysts, as well as our reporters, to be able to challenge these technical visionaries on the strengths and weaknesses of their strategies in front of an audience of their customers.

Network World will provide in-depth coverage of the event in print and offer the full text of the debate on Network World Fusion (www.nwfusion.com).



The good news is that the CEOs are rising to the challenge. Shortly after my editorial appeared, 3Com's Eric Benhamou and Cabletron's Bob Levine assured me they will send high-level officials to participate in the debate. Officials from Bay and Cisco

have also been in touch to confirm their participation in this event.

What's more, the executives running ComNet '97 quickly agreed to schedule the debate as a featured session at the conference, which will be held Feb. 3-6 in Washington, D.C. Kudos to them for jumping on this opportunity to offer added value for the enterprise network buyers attending the show.

I've also had a chance to talk with some key industry analysts about which issues to explore and the best format for the debate.

Now I need your help.

My goal is to have at least two customers on the panel asking questions and to get as much input as I can from buyers. Drop me a line if you're willing to take part, and tell me why you think you should be on the panel. In any case, let me know what questions you want us to ask. I'll be exploring your suggestions in upcoming editorials.

This is a real chance to get beyond the hype and find out which switching architecture makes sense for your company. Help me take advantage of it.

John Gallant, editor in chief

jgallant@nww.com

Teletoons

By Phil Frank and Joe Troise
baba@sfgate.com



SPEAKING THE LANGUAGE

Getting Novell back on its feet is no mission impossible

Mission: Impossible — blockbuster summer movie or a way of life at Novell, Inc.?

It's interesting that Novell chose "Mission Impossible" as the theme for its recent rollout of GroupWise 5. I'm sure the company was just trying to capitalize on the movie's popularity, but the phrase does seem to apply to Novell's recent attempts to pull itself out of a tailspin.

Novell has been losing key players for some time, but Bob Frankenberg's departure last month really caused a stir. If you believe some Novell critics, Frankenberg's resignation is the final crack in the dam, and all hell will now break loose.

Quite frankly, I don't see it that way. Yes, Novell has taken a slide over the past year. Top-level people have left — including Sheldon Laube, Novell's chief technical officer and, just two weeks ago, General Manager Steve Markman — overall sales have slipped a bit, profits are down and even NetWare's market share is on the wane. But that doesn't mean it's time to throw out your Novell products in favor of making Bill Gates even richer than he already is. There's still a lot of life left in Novell.

Frankenberg's departure is just what the company needed. He did a great job of sorting out the mess Ray Noorda left behind and getting the company to refocus on networking, its core competency. (Novell had no business being in the word processing market or worrying about how to connect your copying machine to the corporate network.)

However, now that Novell has completed its downsizing, it's time for the company to find a more charismatic leader, one that can fire up the troops and regain customer confidence.

I don't have the inside track on who will be Novell's next CEO. The search will probably take a while, though, as there aren't many candidates who could (or would want to) fill the job.

In the meantime, the company is in good hands with John Young as chairman and Joseph Marengi as president. Both have the fortitude to pull Novell out of its doldrums.

Novell has very good products and technology. What it lacks is the ability to offer a strategic vision of where that technology fits into the corporate enterprise, as well as the ability to market its products. As one of my friends at Novell readily admits, the firm has always had a "build it and they will come" attitude. The problem is, great technology won't get you anywhere if nobody knows about it.

That ought to change under Marengi's leadership. As Novell's former executive vice president of worldwide sales, he knows how to sell the products and he understands the distribution channel, where most sales occur. But for Novell's sake, I hope he knows how to reach out to the corporate customer, specifically the chief information officer.

Novell needs to reach out to its own business partners, too. Server vendors such as Compaq



Linda Musthaler

Computer Corp., Hewlett-Packard Co., Digital Equipment Corp. and even Dell Computer Corp. are pairing up with Microsoft Corp. in the server wars, partly because Novell has had difficulty proving to those companies that its solutions can play to the enterprise, as well.

I don't want to oversimplify the problems that Novell has

had over the past few years. These problems are difficult and diverse, as are their causes. But perhaps the biggest crisis that faces the company right now is its failure to gain the confidence of corporate America. Oh, sure, the CIOs trust Novell to provide their file and print services, and maybe even corporate-wide directory services. But Novell has never gained the status of an enterprise application platform, and that's where Microsoft is striking hard and fast.

Many companies are adopting Windows NT for its strength as an application server and are deciding to use NT Server as the network operating system (NOS) in order to simplify service and support.

Even though today's version of NT Server may not be as robust a NOS as NetWare 4.X, CIOs view it as an enterprise platform and buy into the vision and strategy that Microsoft has painted.

Novell, unfortunately, has not provided such a road map. How could it when the road kept changing?

Frankenberg deserves credit for refocusing Novell on its core products — NetWare, GroupWise, ManageWise and the soon-to-be-released IntranetWare. It's too soon to tell how IntranetWare will help establish Novell's position in the Internet arena.

However, NetWare, with its superior directory services, remains the premier

NOS for PC networks. The newly released GroupWise 5 is groupware for the rest of us — that is, those of us who don't want or can't afford Lotus Notes.

ManageWise is also gaining strength in the network management market.

Novell's products are just plain good, and technical people know it. Unfortunately, CIOs spend too much time listening to Microsoft-speak. If you are a network manager and this scenario sounds familiar to you, why not invite your Novell sales representative in to meet your CIO? Let him see that Novell isn't just an also-ran.

But you better wait a few weeks, until Novell gets its new leadership team fully in place and figures out what its vision should be. Otherwise, you'll get another disjointed sales call, after which convincing your management to stay the course with Novell really will be a Mission Impossible.

Musthaler is vice president of research at Currid & Co., a Houston-based information technology consulting firm. She can be reached at (713) 789-5995 or via the Internet at linda@currid.com.

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Users may end up casualties of the great browser wars



Ed Krol

In recent weeks, Microsoft Corp. and Netscape Communications Corp. have been doing battle in the great browser wars. Microsoft moved up the release date of Internet Explorer 3.0; Netscape countered by pushing Navigator 3.0 out the door early.

Just as the battle between Godzilla and Rodan caused collateral damage to Tokyo, the Microsoft-Netscape battle is not particularly good for the Internet community. Internet users don't need most of the new features touted as the reason to move to these releases. They need reliability and predictability — something Microsoft and Netscape forgot in the heat of battle.

In the browser wars, there are three weapons that cause the most damage: bugs, nonstandard features and unfriendly interactions.

In both new releases, I ran across bugs in the most obvious areas — areas that probably wouldn't bother the expert user but would be significant to the novice. This leads me to believe both Microsoft and Netscape shortened the quality assurance cycle of their respective products in the name of expediency.

Nonstandard features are a result of the fact that we've entered "the nice thing about standards is everybody has one" era for HTML. For years, Netscape has dominated the market by extending HTML and providing features only Netscape users could enjoy. Now Microsoft is extending HTML, as well, and Netscape users are crying foul. Turnabout may be fair play, but having HTML 3.0, HTML with Netscape extensions and HTML with Microsoft extensions all floating around on the 'Net may explain the 8M bytes of RAM it takes just to run a browser.

In addition, like petulant children, the browsers can be downright unfriendly to each other if you try to load both on one machine. I installed them in the order they were released, Internet Explorer first and Navigator second. After Navigator was installed, Internet Explorer wouldn't run anymore.

A quick visit to comp.infosystems.www.browsers.ms-windows

Web site told me I would have to reinstall Internet Explorer after Navigator. I don't know if this crippling of the competition was done purposely, but it certainly makes comparison shopping difficult.

There was a time when geeks and nerds populated the Internet. They delighted in finding new and wonderful bugs in applications and finding workarounds because this was their ticket to gurudom.

Those days are gone. Real people are using the 'Net to enhance their lives and do their jobs. Buggy browsers are not the way to endear them to the Internet.

Competition leads to innovation, but sometimes the innovation isn't worth the price. Netscape users had it pretty good with Navigator 2.0. Those who move to Version 3.0 will find a larger and less robust browser with some new features they probably won't be using for months.

By then, Netscape will have fought another battle with Microsoft, doubled the size of the browser, added more features and introduced more bugs.

On the other hand, if you are using an older version of Internet Explorer, then upgrading is probably a good idea. The new features — a newsreader, security and better Java support — were sorely lacking in previous versions and will buy enough to make up for the few bugs you will encounter.

Competition is good — it's the American way. But competitors sometimes are so focused on the opponent they ignore the bigger issues of utility and customer satisfaction. If they aren't careful, they, like Godzilla, may be vulnerable from an attack by a small third party.

Krol is author of The Whole Internet (O'Reilly & Associates, Inc., Sebastopol, Calif., 2nd edition, 1994) and assistant director for network information services at the University of Illinois at Urbana-Champaign. He can be reached via the Internet at krol@uiuc.edu.

MESSAGE



QUEUE

A matter of trust

I read Dave Buerger's column "Execs dreaming of riches put product quality at risk" (Aug. 26, page 70). I think the problem goes much further than Buerger indicated. Not only does the customer's trust in the company that lost the exec need to be rebuilt, but in many cases the demoralized staff who worked for that person also needs to be rebuilt.

When someone is a dynamic and bold leader, that person is not an island. His staff, in many cases, made him who and what he is. Maybe he will take, or attempt to take, some of his key people with him. Those left behind often either feel sorry for themselves or seek out better offers. In any case, the hole left by the departing exec can become larger and more bloody than first imagined.

I understand the old ways of doing business are gone, but coming from a family of small business owners, it seems that we have traded just about everything for fast money. Is nothing going to stand the test of time?

Philip Weisman

International project manager

Telecel International, Ltd.

Chantilly, Va.

Just the fax

Your recent fax server review erroneously stated that only one of the products tested, Omtool's FaxSr., supports Microsoft Corp.'s Exchange Server (Aug. 26, page 49). Optus Software, Inc.'s FacSys also provides outstanding support for Exchange Server via a separate module called FacSys Fax Connector. FacSys Fax Connector is the first completely native fax connector commercially available for Microsoft Exchange Server. With this product, users can fully integrate fax messaging with their corporate Exchange platform.

Joseph Avellino

President

Optus Software

Somerset, N.J.

Editor's note: FACSys Fax Connector was not mentioned in the manuals, product literature or price list we received from Optus Software.

Time is on Warp's side

Thanks to Dave Kearns for his column "Notes from the War Zone Take II" (Sept. 2, page 26). He mentions IBM's stealth marketing of OS/2 Warp Server (too true, I'm afraid) and that Warp Server is becoming the best built network operating system on the market.

I've been using Warp Server since its release. People keep laughing at me and asking why I'm not using NT. They will learn, as they jump blindly on the NT bandwagon, and I'll have the last laugh.

Tom Rowe

Network administrator

University of Wisconsin-Madison Center for

Dairy Research

No mention of Mac

Your news brief "Intel backs Microsoft...again" ends with: "Hmmm. No mention of OS/2 or Unix?" (Sept. 2, page 6). A larger percentage of your readers than you might think mentally added: "Hmmm. And Network World again does not mention Macintosh?"

John Servais

Owner

NorthWest House

Bellingham, Wash.

The NOS report card

By Ram Tackett

Banyan, IBM,
Microsoft and
Novell all have
new NOSes on tap.
We'll tell you
which ones
make the grade.

Back in the good old days of just a few years ago, choosing a network operating system was as simple as picking the one with the best file and print performance, or the one that could best connect your legacy resources.

But alas, those simpler days are long gone, thanks in large part to the advent of client/server, Internet and intranet computing. The four major NOS vendors — Banyan Systems, Inc., IBM, Microsoft Corp. and Novell, Inc. — have gone to great lengths to reposition their products to support those

environments.

In the process, the vendors have changed the way you determine if a NOS makes the grade. These days, you need to examine the directory services, client/server messaging, management capabilities and Internet/intranet connectivity each offers.

With each vendor rolling the latest version of its product out the door, we give you this report card on how well they are doing in each of the four areas.



INSIDE

Report cards on:

IBM's OS/2 Warp Server 4.0
page 44.

Banyan's VINES 6.0/7.0 page 46.

Users grade the NOSes:

Windows NT Server 4.0 page 51.

NetWare 4.11 page 52.

OS/2 Warp Server 4.0 page 52.

VINES 6.0/7.0 page 52.

IN-DEPTH REVIEWS COMING

We're busy finishing up top-to-bottom reviews of Microsoft's and Novell's latest NOSes. We'll give you our findings for NetWare 4.11 in the Oct. 7 issue and Windows NT Server 4.0 in the Oct. 14 issue.

REPORT CARD

Novell NetWare 4.11

Directory services:	A+
Messaging:	B-
Management:	A
Internet/intranet connectivity:	A-
Overall:	A-

Novell NetWare 4.11

Novell's been through some tumultuous times of late, as evidenced by the WordPerfect fiasco. The exodus of Robert Frankenberg has fueled further uncertainty.

Yet Novell is a technology leader. The recent executive shifts will play a key part in determining if Novell can devise a strategy to retain that lead. As of now, don't expect NetWare to remain center stage. Instead, expect Novell to place an emphasis on decoupling core services from NetWare and developing them as separate products that can run across various NOS platforms.

Directory services

Novell Directory Services (NDS) may very well be the long-term salvation of Novell. Adherence to much of the design philosophy and data modeling aspects of the X.500 standard wins NDS our highest mark. Novell can position NDS as the directory service of choice if the company quickly moves it away from its core NetWare dependencies.

And that is just what Novell is trying to do in developing versions of NDS to run on Windows NT and various Unix platforms, including SCO, Sun Solaris and Hewlett-Packard Co.'s upcoming 64-bit offering. In addition, Novell has announced plans to synchronize NDS with Microsoft's Windows NT Domain Name Service (DNS) by year-end.

Although there were no major changes to NDS in NetWare 4.11, the directory still offers several strengths over competitors' offerings. Running as a NetWare Loadable Module, NDS supports an unlimited hierarchical structure, support for partitioning that lets you create independent directory segments and directory replicas to speed authentication.

Enhancements slated for delivery before the end of the year include two-phased support for NDS on Windows NT, NDS on Unix and native Lightweight Directory Access Protocol (LDAP) support.

Novell also plans for X.500 directory interoperability via third-party gateways and the integration of DNS naming

within NDS. Novell will add support for X.509 public and private key security certificates by next June, making user authentication across multiple directories possible.

Messaging

Novell isn't putting much effort into beefing up the core messaging facilities within its NOS, opting instead to focus on a separate messaging application, GroupWise. Here, too, Novell will be pushing to make GroupWise run across a variety of NOSes.

GroupWise expands the basic E-mail category to incorporate groupware components such as calendaring, scheduling, task management, shared folders and workflow. It also embodies the technology Novell was really after when it acquired WordPerfect in 1994.

Based on GroupWise 5.0, Novell gets an above-average mark for messaging. The latest release of the product offers a benefit to users by executing E-mail rules on the server. Now, if you're out of town, you don't have to leave your client running to kick off a rule that automatically responds to incoming messages from certain people. The server will do that for you.

A feature called Hit the Road contributed points to Novell's score here. The feature enables you to duplicate your messaging database to your local hard disk. Mobile management is especially robust because you can selectively transfer data from your in-box or other folders to a laptop. A data compression option will even

Executive changes are occurring rapidly at Novell. For the full transcript of an interview with newly appointed President Joe Marengi, visit Network World Fusion. Enter the number above in the DocFinder box on the home page.

<http://www.nwfusion.com>

save these to a floppy disk for easy transport between home and office.

Novell says before year-end it will ship a GroupWise 5.0 feature that will let you access a GroupWise 5.0 universal in-box from a Web browser.

Management

Novell gets the highest mark here for improving on an already strong offering. With NetWare 4.11, Novell has beefed upabend error detection, correction and recovery. Depending on the problem, NetWare can now end the process in question, bring down the server or restart it at a

given time. Moreover, the new feature enables users to save their work and keeps the file system in sync.

The NetWare Application Launcher will also be part of NetWare 4.11. The launcher enables you to click on a client workstation-based icon to download a server-based application. The real benefit

is that it enables administrators to move applications from one server to another without having to update the client icon with the new location. Application metering will be coming in a future enhancement.

Improvements to the ManageWise add-on product rounds out Novell's advances in this area. ManageWise enables you to manage a heterogeneous environment of NetWare 4.11 and NT Server servers

plus NetWare, Windows 95 and OS/2 clients. Support for Windows NT clients will be coming later this year.

ManageWise adds more to what's available in Windows NT Server's native performance monitor, permitting you to view a year's worth of trends on everything from disk usage to memory usage. One drawback to the current ManageWise implementation is that you need to run it over Novell's IPX to get the full benefit. The product will be moving toward true protocol independence in the future.

Lastly, Novell is working to make it possible to manage NetWare servers via any Web browser and to use Java applets to gather real-time performance data that can be imported into ManageWise.

Internet/intranet connectivity

In NetWare, Novell has a powerful and efficient data management engine with the ability to pull information off the wire, process it, and get it back on the wire faster than most anything else available. Novell is building on that power with IntranetWare and gets a high mark for its effort.

IntranetWare includes a high-performance Web server and browser, a gateway between TCP/IP- and IPX-based networks, and a Multi-Protocol Router for WAN and Internet connections. IntranetWare is basically a superset of NetWare 4.11 with Internet plumbing added in. In fact, if you buy IntranetWare, you get NetWare 4.11 at no extra cost.

IntranetWare will have built-in symmetric multiprocessing (SMP) support—unlike the original OEM distribution model for NetWare 4.1. Long-overdue IP support will now be part of the core IntranetWare offering, ending the dependency upon IPX for transport.

With IntranetWare, Novell is also hoping to move back into the application server arena with built-in support for its NetBasic interpreter and forthcoming support for Java.

SMP SHORTCOMING

One drawback to NetWare's SMP implementation is that applications must be multithread-enabled to gain performance benefits.

REPORT CARD

Microsoft Windows NT Server 4.0

Directory services:	C+
Messaging:	B+
Management:	A-
Internet/intranet connectivity:	A+
Overall:	B+

Windows NT Server 4.0

With the ability to run on Intel-based single-processor and SMP systems, as well as MIPS, PowerPC and Alpha processors, this latest release of Windows NT Server offers strong cross-platform support. The NOS has also improved its file and print performance by as much as 66% on Fast Ethernet LANs, according to tests conducted at the National Software Testing Laboratories.

But Windows NT is still a resource hog. When comparing uniprocessor file and print performance in Windows NT 4.0 against NetWare 4.11, you can expect NT to lag by about 10%.

However, add more processors and memory to NT and the difference becomes negligible.

One of the most significant differences in NT Server 4.0 is the relocation of drivers to ring zero, the most trusted and powerful memory area in the Intel processor architecture, along with plans to make drivers compatible across all 32-bit versions of Windows, including Windows 95 and NT desktop.

This may not be a good thing, though. Although it certainly expands the NT driver compatibility list, it does so at the expense of introducing potential server instability due to relying on what could turn out to be buggy drivers.

Directory services

Microsoft earns an average mark here. NT Server 4.0's native directory support, Microsoft's first stab at this, is really just an extension of Microsoft's LAN Manager days when Windows NT domains only trusted each other, not other NOSes.

The domain scheme in NT Server 4.0 is still a two-level hierarchy limited to the administration of Windows NT environments.

In this hierarchy, one master domain might contain the entire user database. Slave domains could then assign access rights to resources within their domains to those users but defer to the master domain for user authentication.



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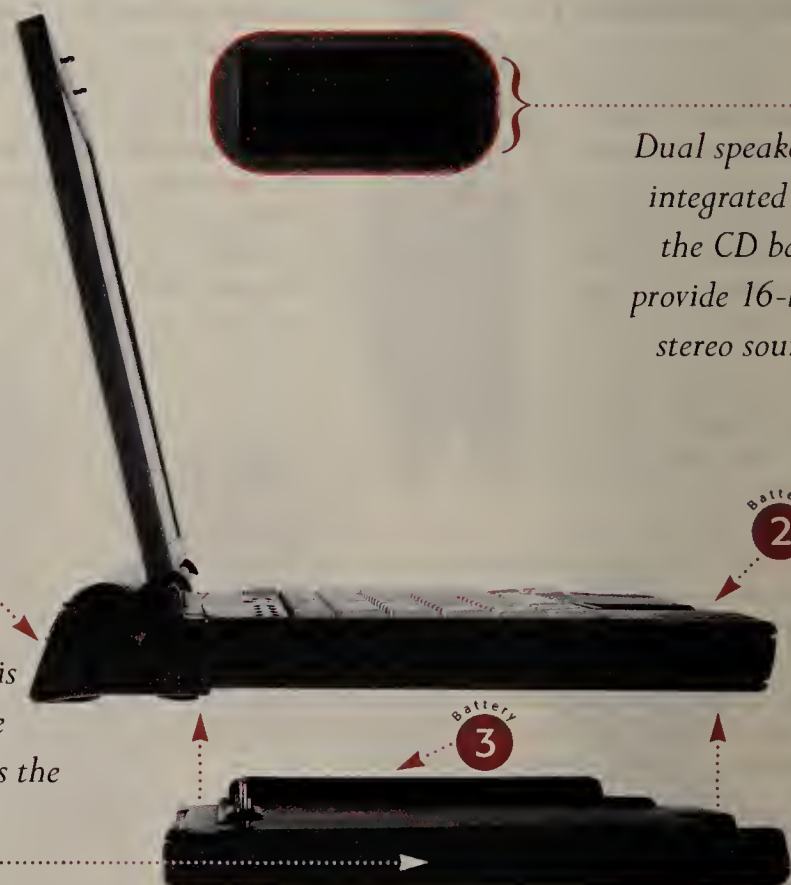
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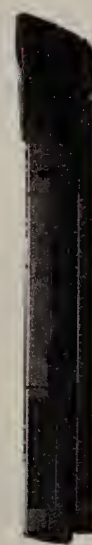
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What this means is that slave domains must check with the master domain before granting access to resources.

This domain model is fine for setting up small to midsize networks, but can become hairy in complex networks. Thus, NT Server's directory remains more suited for workgroups as opposed to the enterprise.

The only talk coming out of Microsoft about improving directory services centers on the Cairo release of Windows NT due out in the 1997/1998 time frame. As part of Cairo, Microsoft plans to release its Open Directory Services Interface (ODSI) API and OLE-Directory Services (OLE-DS).

ODSI is being designed to let developers build Windows client applications that can access OLE-DS, which transparently interacts with a variety of directories. This is similar to how Microsoft's Open Database Connectivity (ODBC) opened up database connectivity and its Messaging API (MAPI) opened up mail directories.

You can get results of a test comparing the performance of Windows NT Server 4.0 to Version 3.5.1., and learn more about ODSI and OLE-DS on Network World Fusion.

Enter the number above in the DocFinder box on the home page.

<http://www.nwfusion.com>



Eventually, Microsoft hopes ODSI will replace MAPI.

Likewise, Microsoft wants to use ODSI to access operating system directories, such as NDS, as well as application directories within products such as Microsoft Exchange and Lotus Notes.

This sounds nice in theory, but you have to look at reality. If the past is any indication, ODSI drivers will be as painfully slow as the majority of current ODBC drivers.

Microsoft has pledged to join the league of vendors rallying around the LDAP, a proposed standard for providing access to stand-alone or X.500-based directories over TCP/IP. That's a positive step, but it won't be delivered until Cairo ships.

Messaging

As is the case with Novell, Microsoft's messaging capabilities revolve more around its stand-alone Exchange Server 4.0 product, released last April, than on core NOS-based messaging facilities. Exchange Server runs over a rich set of transport protocols, including Named Pipes, IPX/SPX, TCP/IP, NETBIOS, VINES IP and AppleTalk. However, Exchange only runs on Windows NT Server.

But tight integration with NT Server serves Exchange well, which is why it gets an above-passing mark. Because Exchange runs as an NT service, restarting it when you reboot the server

is automatic.

That's not the case with Notes, which runs as a console application requiring a system logon.

While we're on the subject of integration, Microsoft went to great lengths to stuff previously stand-alone offerings into Exchange. Migration tools make it easier for users to migrate from Microsoft Mail for PC Networks and Lotus cc:Mail to Exchange.

There are also bundled tools such as basic X.500 directory support, an X.400 connector and support for Internet mail standards, including Simple Mail Transfer Protocol and Multi-purpose Internet Mail Extensions for linking Exchange with other E-mail systems.

One nagging flaw in Exchange is the lack of an address book import facility. There's no easy way to pull address information into Exchange from third-party databases or contact managers. Look to Microsoft's Outlook client, the next replacement for both Exchange and Schedule+, to provide this function.

On the horizon, expect Exchange to move toward more open Internet-based standards.

Forthcoming releases will include the ability to host Usenet groups within Exchange public folders.

Also, you'll be able to look through Exchange public folders from Web browsers.

Management

Microsoft gets high marks here. NT Server 4.0 comes with Performance Monitor (perfmon), a broad-based tool that uses a series of counters to track data, such as the number of processes waiting for disk time, the number of network packets transmitted per second and the percentage of processor utilization. You can create charts or set alerts based on this data that can help you gauge and tune Windows NT system performance.

There are also software aids, or wizards, in the new version that make administration easier for novice users.

These wizards help in adding user accounts; managing groups, files and folders; adding programs and printers; and updating network client setups. Experienced NT Server administrators, who might find these wizards more of a hassle than a help, can bypass them if they prefer.

Microsoft has also integrated the Windows 95 user interface with NT Server 4.0, which lets you navigate administration functions more easily.

Contributing to the high mark we've given NT Server is the fact that it has been outfitted with a scaled-down version of the Network Monitor facility that is bundled with Microsoft's Systems Management Server (SMS).

Network Monitor enables you to examine network traffic to and from the server at the packet level when using promiscuous-mode network adapters. The big drawback is that Network Monitor only watches traffic to and from the server it runs on. The version that comes with SMS can monitor traffic traversing virtually any part of your LAN.

Lastly, NT Server now provides tighter integration among Dynamic Host Configuration Protocol (DHCP), Windows Internet Name Service (WINS) and DNS servers.

The integration makes address resolution in NT Server 4.0 nets a little easier.

For instance, DHCP, which lets newly installed clients request an IP address from a DHCP server, will now update WINS, a Windows-based version of DNS, when new addresses are handed out. Likewise, a WINS server can automatically pass

along an NT Server 4.0 client's query for an address it doesn't maintain to a DNS server for resolution.

In the future, look for Microsoft to integrate the functionality of Network Managers, Ltd.'s NMC Vision technology into SMS (or possibly Windows NT Server) now that Microsoft has acquired that firm. NMC Vision is used to manage hubs and routers.

Internet/intranet connectivity

This is where Microsoft really shines. The company finally recognized the immense impact of the Internet earlier this year and decided to bundle Internet Information Server (IIS) 2.0 with NT Server 4.0. IIS 2.0 is more than 40% faster than its predecessor, making it one of the fastest available for Windows NT Server.

IIS can also be used to build intranets, given that it comes with Gopher and improved File Transfer Protocol services, along with an Index Server that enables the content indexing and search capabilities of HTML and Microsoft Office documents.

Microsoft's FrontPage Web authoring and management tool, as well as a new graphical DNS utility that lets you integrate DNS, DHCP and WINS, is also bundled with NT Server 4.0.

Development efforts already under way include an Internet commerce product code-named Merchant.

Microsoft says the product should provide a robust online customer and merchandising system with minimum development.

Future upgrades to IIS will include a scripting engine code-named Denali. IIS currently supports Visual Basic Script, but may eventually support JavaScript, Perl or REXX, which would ease Web server code development.

ROUTER INCLUDED

A nice addition to NT Server 4.0 is a Multi-Protocol Router (MPR), which eliminates the need for a dedicated LAN-to-LAN router. MPR will route IPX/SPX, TCP/IP and AppleTalk traffic between LAN segments and can pass traffic between Ethernet and token-ring. NetWare users have enjoyed this functionality for some time.

REPORT CARD

IBM OS/2 Warp Server 4.0

Directory services:	B-
Messaging:	A-
Management:	A-
Internet/intranet connectivity:	B-
Overall:	B

IBM OS/2 Warp Server 4.0

There are two flavors of this NOS: OS/2 Warp Server and OS/2 Warp Server Advanced. Both have near-identical performance curves. The difference is that OS/2 Warp Server Advanced has been optimized to run a little faster under Intel Corp.'s Pentium and includes an advanced file system called HPFS386, which supports disk mirroring.

Now that Warp Server Advanced is SMP-capable, IBM can rival Windows NT Server's top-notch performance when acting as an application server. However, IBM still lacks the breadth of applications for its NOSes that Microsoft has, and the question remains whether developers will scramble to support OS/2's Open32 API set instead of Microsoft's Win32 API set for building SMP-based programs. It would be nice if IBM would hedge its bets by moving Win32 into its Open32 API set, which already includes Win16 API support.

Directory services

IBM gets an above-average mark here, even though Warp Server's directory is based on the domain topology of its pre-

For signs of where Warp Server's Internet offerings may be headed, jump on Network World Fusion to

check out IBM's Net.Commerce Initiative and its Lotus Notes Domino offering. You can also get more information about DSS, a directory services add-on product. Enter the number above in the DocFinder box on the home page.

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decessor, LAN Server, and shares similar traits with NT Server, thanks to the Microsoft/IBM relationship of the late 1980s.

And although Warp Server doesn't use NT Server's trusted domains, IBM supplies add-on products such as its recently released Directory and Security Server (DSS) to one-up Microsoft in the directory area.



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DSS is part of IBM's Software Servers strategy for producing NOS products that run on several platforms — notably OS/2, AIX and Windows NT.

When installed on Warp Server, DSS replaces the native domain structure with a global, cell-based directory. Although a domain is mostly used to define all the resources and users for a single workgroup, a DSS cell can be used to define all the resources and users for a line of business, a region or an entire company.

With DSS, you can enter your password once and gain access to multiple servers, similar to Novell's NDS. The difference is that DSS works across NOSes and platforms, helping you pull legacy systems into the LAN environment.

DSS is based on the X.500 global naming system. Unlike its competitors, DSS' cell-based directory doesn't have to be hierarchical. Because DSS uses the Distributed Computing Environment (DCE) to knit together thousands of domains, each one can have completely different administration procedures, if necessary.

By tapping DCE, DSS gives you the flexibility to mix and match systems and applications from various vendors. With DSS, IBM says, you could have an HP-UX directory server, a Digital Equipment Corp. security server and an IBM file and print server working together.

IBM is also touting DSS as the means to facilitate file access and resource sharing on an intranet. DSS looks promising. Time will tell if it delivers.

Messaging

IBM, too, is pushing separate products — cc:Mail and Notes — as its key messaging facilities, and we give it a high mark for this strategy. Notes serves the robust needs of larger organizations, whereas cc:Mail is ideal for midsize or small organizations.

There are significant differences between the two. For instance, in cc:Mail, the E-mail client must be running to execute a rule. In Notes, rule processing takes place on the server regardless if the client is running.

Notes is a strong contender, offering robust security in the forms of certificate-based authentication, digital signature verification and message encryption. The product boasts native TCP/IP, SMTP and X.400 support.

Notes was the groupware forerunner and still offers a conferencing messaging solution with threaded group discussions and support for richly formatted documents.

Management

If you're looking for one-stop shopping for NOS and client management tools, Warp Server may be just the ticket. The rich set of tools that comes with Warp Server, including software distribution, hardware and software inventory, application sharing and application licensing

management is why it gets a high mark in this area.

Remote control is also included, as well as network and workstation performance monitoring, application and critical files monitoring, and robust backup features. Products offering this capability are available for the other three NOSes but at additional cost.

Similar to NT Server, Warp Server offers DHCP but with a Dynamic DNS (DDNS), to boot. DDNS is an extension to standard DNS that allows dynamic updates to the name database, which means you can have a follow-me type of system for professionals who move to other subnets. Essentially, when a client is moved, it requests an address from a DHCP server.

Once the address is assigned, that information is given to the DDNS for future name queries. Microsoft's WINS does nearly the same thing.

The System Management Services included in Warp Server offer continuous monitoring of managed systems similar to Windows NT's perfmon. You can monitor as

many as 105 parameters such as bytes received or sent and disk or cache accesses.

Internet/intranet connectivity

IBM has had its Internet Connection Server available in Warp Server since last March and receives an above-average mark for it. The Web server software contains rudimentary tools and templates for building HTML home pages, plus gateways to connect to IBM's CICS and DB2 databases, as well as support for open standards such as application interfaces using the Common Gateway Interface.

Internet Connection Server comes with a Netscape Server API compatibility module, which IBM says will let you port existing NSAPI programs to it without losing any functionality. Support for Microsoft's Internet Server API is in the works.

But one area IBM needs to work on is its Web authoring support. Unlike the bundle in NT Server 4.0, Warp Server 4.0 provides little in the way of HTML preparation.

Down the road, look for IBM to add support for its Net.Commerce initiative to Warp Server. Net.Commerce is designed to provide links to IBM's DB2 database and its Internet Connection Secure Web Server — a beefed-up version of the free Internet Connection Server. This more secure version supports Secure Sockets Layer and Secure HTTP protocols. Support for electronic data interchange, Secure Electronic Transactions and Joint Electronic Payments Initiative will also be coming down the road.

In addition, Notes has been souped-up for the Internet and intranet via its Domino offering. Domino transforms Notes into an Internet applications server, enabling Web clients to access Notes applications.

REPORT CARD

Banyan VINES 6.0/7.0

Directory services:	A+
Messaging:	C
Management:	B-
Internet/intranet connectivity:	C
Overall:	B-

Banyan VINES 6.0/7.0

Of the four major NOSes, VINES is the one that prompts the most questions about long-term viability. Bob Rentsch, product manager for VINES and Banyan's Enterprise Networking System (ENS), confirms industry reports that VINES' market share dipped last year when Banyan lost money after a reorganization. However, Banyan has reported a profit in the first two quarters of this year.

With a drop in the use of its NOS, Banyan used the reorganization to form new divisions that are developing products and services to run on other NOSes such as Windows NT Server.

The question is: Will Banyan be able to come up with enough products and services to win new business? Support and upgrades to VINES will continue, as evidenced by the announcement of Version 7.0 earlier this month (a bit late for us to give it a thorough going-over), but market forces will keep chipping away at its market share.

Directory services

This is clearly Banyan's strong suit. The company was a trailblazer in directory services in the mid-1980s, a good 10 years before its major competitors began implementing them. Its flagship technology, the StreetTalk directory, gets the highest grade.

StreetTalk is also becoming Banyan's core product under the Universal StreetTalk label. The company ported the directory to Windows NT earlier this year to mark the first time Banyan has created a version of StreetTalk that runs under something other than a Unix-based platform. Eventually, Banyan will provide a single signon across NDS or NT DNS and Universal StreetTalk-based applications.

Universal StreetTalk is distributed as binary code. The developers' kit now comes with Microsoft's ActiveX and LDAP APIs on top of the MAPI support it already had. The StreetTalk naming system is made up of the StreetTalk database, a collection of all fundamental information about every part of the network. Users can query the database, searching for specific people or resources on the network.

Unlike Novell's NDS, StreetTalk uses a fixed three-level hierarchy in its directory

tree: the specific item, the group to which the item belongs, and the organization, which can contain one or more groups. Attributes can be added to the properties of specific items and can be readily searched. Banyan plans to add "n-level naming" to StreetTalk so it can support unlimited numbers of directory levels.

Messaging

Unlike its three major competitors, Banyan has improved its core NOS messaging facilities, as opposed to focusing on separate but integrated products. The company's Intelligent Messaging III back-end engine, which works with its Beyond-Mail front end, can now find the least cost route for messages and can automatically compress the size of messages going out over slow-speed lines.

Banyan is working to port the Intelligent Messaging engine to NT and produce an E-mail rules processing engine for NT by year-end, signifying a plan to integrate its rules with back-end SQL databases running under NT. The move to run rules on NT could help Banyan erase the need to process all rules on the E-mail client, which is currently one of Beyond-Mail's major drawbacks. Ironically, Banyan was among the first in the industry with E-mail rules; it now finds itself in the position of trying to regain ground on this front.

But stronger rules processing alone won't help Banyan bring its messaging capabilities up to par with the other vendors. The company is missing several other features such as bulletin boards and message threading. Application development is also a weak area.

Management

Banyan's Distributed Management Architecture, or DeMarc, is a framework for scalable, standards-based management. Integrated with StreetTalk, DeMarc is based on SNMP, enabling VINES network management from any SNMP console.

Banyan is promising to deliver LDAP support in its StreetTalk directory and Switchboard

Internet directory service by year-end. Hop on Network World Fusion to find out more about Banyan's plan and get a white paper on LDAP from Netscape Communications Corp. Enter the number above in the DocFinder box on the home page. <http://www.nwfusion.com>



NOSes

Preparing for the next generation

ware distribution, asset management and hardware/software inventory control. One nice feature of NetWizard is its ability to undo previously executed distributions and return all stations to their prior condition.

For workstation license metering, Banyan also now offers StreetLegal through an agreement with LANshark Systems, Inc. of Columbus, Ohio.

StreetLegal controls end-user access to applications by specifying access characteristics for each application, such as who has access to it and how many copies are available. If the maximum number of con-

current connections has been met, users can be automatically notified when a connection frees up.

One drawback to these workstation management products is they're not integrated. You can't query StreetLegal's licensing information via NetWizard, for instance. This why Banyan gets

only an above average mark here. However, Banyan can improve this grade if it delivers on its promise that VINES 7.0 will utilize technology (that's been around since the 1980s) for managing server licenses. Currently, hardware-based server keys have to be physically placed on each VINES server, a headache for large shops.

BANYAN'S INTERNET DIRECTORY

The Switchboard Web site at <http://www.switchboard.com>, which lets users look up the addresses and phone numbers of more than 100 million people and 10 million businesses, is Banyan's strongest Web effort yet and an attempt to position StreetTalk as the Internet directory.

In VINES 7.0, these are supposed to be eliminated and replaced with a software-key licensing and network address scheme.

Internet/intranet connectivity

Unlike its competitors, Banyan has been moving slowly into the bold new world of the Internet and intranets.

However, Banyan has made core NOS improvements to move VINES closer to more open standards supporting both TCP/IP and its VINES IP. Nonetheless, Web-based solutions aren't bundled with VINES.

You have to rely on third-party vendors

such as Incognito Systems for Web-based tools for VINES, which is why Banyan gets an average mark in this area.

Banyan will be enhancing StreetTalk, however, with a new feature called Click to Information, which will help users locate and share Web pages, files and applications.

The bottom line

If you're starting from scratch and have

to place bets on a NOS today, you probably would lean toward NetWare 4.11 or Windows NT Server 4.0, even though both need some bolstering to fully serve an enterprise. Microsoft needs a strong directory service, whereas Novell needs to get more third-party developers for application services.

As for the other two, IBM offers strong legacy integration support, but is having a difficult time wooing new third-party

developers into the fold. Banyan offers strong technology, but is lagging in the application integration and Internet areas — relying too heavily on third parties for solutions.

Tackett is an industry analyst with Currid & Co., a technology assessment firm in Houston. You can reach him via the Internet at tackett@currid.com, or by phone at (713) 789-5995.

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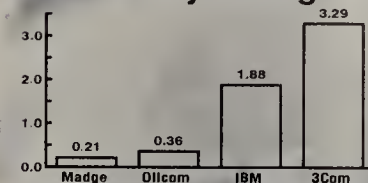
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FROM THE FIELD: users file their NOS reports

By Charles Bruno

TUCSON UNIFIED SCHOOL DISTRICT

Microsoft NT Server 4.0

Internet services:

A-

Grades given only for services the user has experience with in the new version.

Windows NT makes the grade for Tucson school district

Jesse Rodriguez kissed NetWare good-bye last year and hasn't looked back. He's too busy passing out high grades to Microsoft Corp. for its Windows NT Server.

As director of information technology at the Tucson Unified School District in Arizona, Rodriguez has spent the past year retiring NetWare 3.12 servers and cutting over to NT Server 3.51 boxes. Rodriguez says he's even toying with the idea of upgrading to NT Server 4.0 by Christmas.

For the school district, its NOS decision came down to a variety of factors. The organization wanted a NOS that would integrate well with a back-end database engine, provide tight ties to downstream Microsoft Windows and Windows 95 clients and not overtax its budget.

The district decided to standardize on Sybase, Inc.'s SQL Server for its back-end database — an easy call, Rodriguez says, because the integration with NT Server was such a tight fit. He's looking forward to NT Server 4.0 largely for the same reason: the integration it offers with other Microsoft products.

"We're not talking about outrageous new features [in NT Server 4.0]," Rodriguez says. "It's just incrementally better. That's the thing about Microsoft: It puts out products in increments, but they're nice increments."

One of the enhancements that pleases Rodriguez is the inclusion of previous service pack releases into the core operation system. Basically, older versions of the NOS require administrators to install several different service packs that implement a variety of bug fixes and enhancements that Microsoft has been

choosing a network operating system is probably one of the most strategic software decisions you'll ever make.

But Kimberly Ochs, a research analyst at Decision Drivers, Inc., an arm of Gartner Group, Inc., says many organizations fall into the trap of tying a NOS decision to product feature sets, functionality and costs — tactical issues that may not provide you with the most complete information with which to make a decision.

Often overlooked, Ochs says, are service and support capabilities, vendor vision and an evaluation of the vendor's ability to execute its promises.

"Ultimately, what should be driving the decision is the business needs of the organization," Ochs says.

In an attempt to better understand what is driving NOS decisions at major companies, *Network World* interviewed four users, each of which went with a different major NOS brand. Each had sound reasons for implementing its NOS of choice, and each has at least dabbled with the latest version of their preferred NOS, enabling them to offer their own report cards covering key areas.

delivering piecemeal as they crop up, Rodriguez says. Under 4.0, those changes have been integrated into the base operating system. "That means we don't have to reinstall them every time we bring up a new server or make changes to an existing one," he says.

Rodriguez is also pleased that Microsoft is improving the NOSes iconographic interface, making it much more in line with Windows 95. "The similarity to desktop systems will make it easier for administrators who have to flip-flop between the systems," he says.

Internet accolades

Today, the school district — which serves Tucson's K-12 population — operates 134 sites, each with its own server and contingent of Windows and Windows 95 clients hanging off 10Base-T LANs.

One of the critical components of NT Server 4.0, Rodriguez says, is improvements Microsoft has made to the NOSes Internet access services. He gives this aspect of the NOS an A-.

The school district is looking to use the

World-Wide Web as part of an intranet to enable staff to trade information, he says. Version 4.0 provides the tools necessary to do that by integrating Microsoft's Internet Information Server (IIS), Proxy

ket, IIS had yet to be announced. "There's just a much tighter integration of the Internet tools now with the core OS." And Microsoft's Domain Name Server has been spruced up so that it offers a greater degree of point and click operation than before. "All of Microsoft's Internet tools can now be installed as NOS services instead of add-ons that ride on top of the NOS," Rodriguez says.

The integration of NT Server and IIS gives Tucson Unified the ability to tie a Web site back to a SQL database so updates pretty much occur without human intervention, Rodriguez says.

The icing on the cake for Microsoft's Internet support in NT Server 4.0 is the imminent arrival of Microsoft's own search engine, which will tie in tightly with the NOS and other Internet-related tools. That's important, Rodriguez says, because it begins to lay a foundation for where Microsoft is headed with its Cairo operating system.

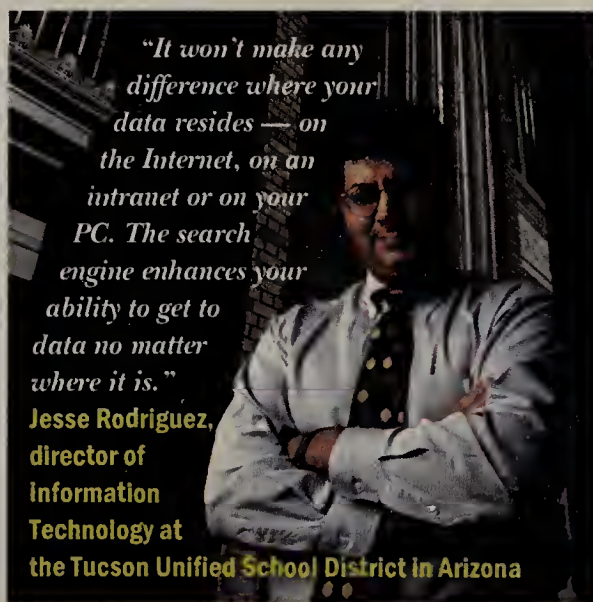
"The whole operating system interface will undergo marked change," he says. "It won't make any difference where your data resides — on the Internet, on an intranet or on your PC. The search engine enhances your ability to get to data no matter where it is."

Rodriguez says Microsoft's support for native TCP/IP protocols in NT Server 4.0 makes it easy to set up resources. And the vendor's Dynamic Host Configuration Protocol (DHCP) facilitates management of TCP/IP nodes.

Typically, network administrators must configure each node with an IP address. With DHCP, when a node joins the network, the DHCP server automatically assigns it an IP address, vastly reducing administrator interaction.

Rodriguez, who also is a Certified Novell Engineer, says this is much easier than assigning IP addresses in NetWare. "To support IP on a NetWare client, you'd have to alter the NET.CFG file," Rodriguez says. "You don't worry about any of that with NT 4.0; DHCP takes care of it for you."

All in all, Tucson Unified is looking forward to NT Server 4.0. Rodriguez sums it up this way: "Microsoft's pieces are just glued together better than the others."



"It won't make any difference where your data resides — on the Internet, on an intranet or on your PC. The search engine enhances your ability to get to data no matter where it is."

Jesse Rodriguez,
director of
Information
Technology at
the Tucson Unified School District in Arizona

REED RAHN

Server and other tools with NT Server 4.0. "They polished it up and fixed the rough edges," Rodriguez says. He points out that when NT Server 3.51 hit the mar-

HALLMARK CARDS, INC.

Novell NetWare 4.1

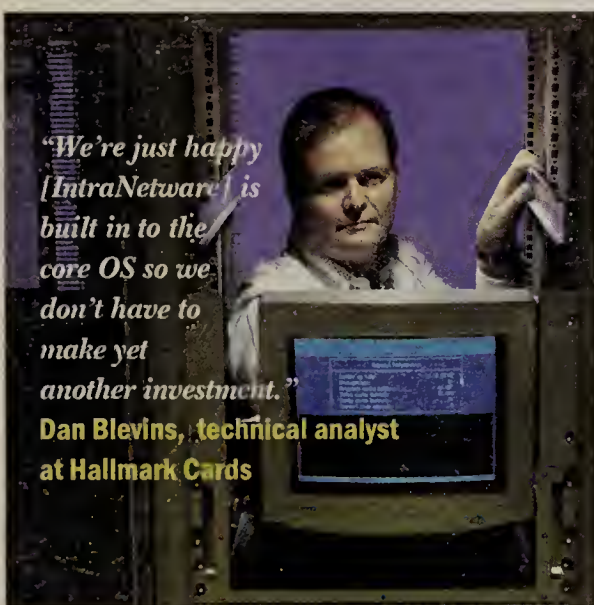
Directory services: **A**
 Messaging: **A**

Grades given only for services the user has experience with in the new version.

Green River runs through IT

Deep in the bowels of Hallmark Cards, Inc.'s corporate offices, Dan Blevins and his compatriots have just successfully installed yet another NetWare 4.1 server. Blevins knows when he returns to his office, the calls will be waiting for him. Lots of calls.

"Within a matter of minutes after a server comes up, we start getting requests for access to new services," says Blevins, a technical analyst at the Kansas City, Mo., greeting card maker. "That's because the directory is pretty seamless; people see what's out there; we don't have to do anything special."



Dan Blevins, technical analyst at Hallmark Cards

This is due to NetWare 4.1's Novell Directory Services (NDS), which allows Blevins and others to associate user accounts with networkwide rights, not just access tied to specific servers. And with NetWare 4.11 — previously known as Green River — Blevins says Novell is packing more intelligence into the NOS to enable it to monitor net conditions on behalf of administrators.

Hallmark operates a network with 60 NetWare 4.1 servers and about 6,000 client workstations. Throw in a few NT Servers humming away as applications servers and Unix systems that handle the company database, plus three mainframes, and you can quickly understand the company's data access requirements.

Windows 3.1 clients dominate the desktop, although about one-third of the desktops are Macintosh systems. Hallmark is planning to move its Windows boxes to Windows NT workstations.

To Blevins, NetWare 4.11 is a natural progression. He says the bundled support for NetWare IP will help users such as Hallmark, whose goal is a single protocol — namely TCP/IP. The IP stack was the main issue for Hallmark when it exam-

ined client workstation capabilities, Blevins says. IP will be the launching point from which clients can access host and Unix systems.

Novell's IP will help ensure greater interoperability with other systems, something often lacking in Microsoft products, Blevins says. "Microsoft follows industry specs when it is convenient for them to do so and is not hesitant to move away if they feel they have a better way of doing it."

Blevins says another plus in the latest NetWare release is that Novell will bundle the NOS with its IntranetWare software. "We're just happy it's built into the core OS so we don't have to make yet another investment for an intranet," he says. Moreover, the IntranetWare integration with NetWare will enable users to link NDS pointers to a Web page. That's important because it will give intranet users the ability to drill down into corporate directories to get at information from their Web interface.

And Hallmark is looking forward to NDS tools that "are superior to existing offerings and more tightly integrated with the OS." One such tool is NDS Manager, which enables administrators to monitor "whether server updates are flowing correctly," Blevins says.

"With NetWare 4, the health of the network hangs on how well servers are in sync with one another," he adds. These tools are "more proactive and tell you what to look at." There was a way to get such data before, but he says administrators would have to jump through hoops to get at it.

NetWare 4.11 also will sport improvements in error handling, and new troubleshooting routines for abends will let you take down the server more gracefully than before.

Impressed with such NDS tool updates, Blevins says they merit an A for meeting user needs and for simplifying administrators' lives. "This is the start of automated facilities for management. Novell is showing me they've learned a lot in the last four years," he says.

FURR'S BISHOP'S, INC.

IBM Warp Server 4.0

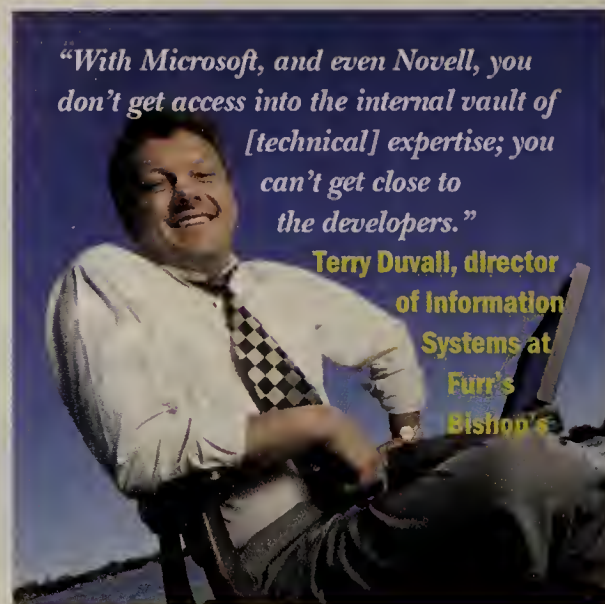
Messaging: **B**
 Network management: **A**
 Internet facilities: **B**

Grades given only for services the user has experience with in the new version.

Good service sells restaurateur

Despite a number of functions and features that steered Terry Duvall to IBM's Warp Server 5.0, a nontechnical factor sold him on the product. Scared off by inadequate service and support from distant reseller partners of Microsoft, Duvall gravitated to IBM's NOS largely due to the liberal access he gained to IBM's technical development staff.

"With Microsoft, and even Novell, you



Terry Duvall, director of Information Systems at Furr's Bishop's

don't get access into the internal vault of expertise; you can't get close to the developers," says Duvall, director of Information Systems with Furr's Bishop's, Inc., a Lubbock, Texas, restaurant chain that runs 114 cafeteria-style eateries in 13 states.

Duvall and his staff are wrapping up a conversion to Warp Server 5.0 from PC DOS 5.0, a project that began last April.

Each restaurant is now anchored by Pentium-based IBM PC 350 servers with 32M bytes of memory that communicate with IBM 4695 touchscreen POS terminals — which Duvall says are fancy versions of IBM's ThinkPad. Corporate offices are supported by an IBM Application System/400 running Warp Server on an IBM Token Ring network, with about 150 various workstations.

The company's IS staff is most impressed with Warp Server 5.0's network management, and Duvall also gives high marks to the product's Internet access features. And pending enhancements from IBM and Netscape Communications Corp., he may boost his opinion of the Internet components even higher.

On the Internet side, IBM has provided a bevy of Web development products for Warp Server 5.0, but Duvall says he's holding out for browser enhancements, which he says are due any day now from IBM and Netscape.

"Once we get a native OS/2 browser, we'll see processing improvements and our 32-bit applications will run smoother," Duvall says.

Warp Server's existing Internet facilities get a B grade from Duvall, but could ultimately wind up with an A if IBM completes delivery on the browser improvements it's working on with Netscape.

One product area of Warp Server 5.0 that already has earned an A, Duvall says, is network management. The combination of IBM's SystemView and NetFinity enables Furr's Bishop's to automatically track hardware and software and schedule maintenance updates at off-hours. "With a small staff like ours, that's one less thing we have to worry about," he says.

If network management is getting high grades for its ability to off-load work from administrators, Warp Server's messaging features are just passable, Duvall says. "You can create 512K[-byte] messages and send them to other users, but it's just basic messaging," he says. IBM has com-

mitted to upgrading Warp Server's basic messaging features by bolting a copy of its Lotus Notes Mail Server onto Warp Server in the near future.

Ultimately, tighter integration between Warp Server and Lotus Notes Mail Server is needed, Duvall says. "That means I'd have one less application to maintain since messaging could become a service under the NOS," Duvall adds. He does, however, applaud IBM's decision to rethink its message queuing. IBM, he says, is moving from a single-threaded queue to an asynchronous queue — a move he says will significantly boost messaging performance.

Duvall is also looking forward to Merlin, a code name for a set of enhancements to the Warp Server 5.0 clients that will let them tap into Lotus Notes Mail servers.

CONTINENTAL GRAIN CO.

Banyan VINES 7.0

Directory services: **A+**
 Messaging: **B**

Grades given only for services the user has experience with in the new version.

A grain of doubt over VINES 7.0

Continental Grain Co. has relied on Banyan Systems, Inc.'s VINES software for more than a decade, but now it is having second thoughts. The company is awaiting Banyan's newest release of the software, VINES 7.0, but is also eyeballing Microsoft Corp.'s Windows NT Server.

"Banyan says it's getting out of the NOS market and into the services market," says Hilly Fuchs, assistant vice president of information systems at the New York company. "That brings into question the long-term viability of VINES' file and print services and whether [Banyan] keeps up on the E-mail side."

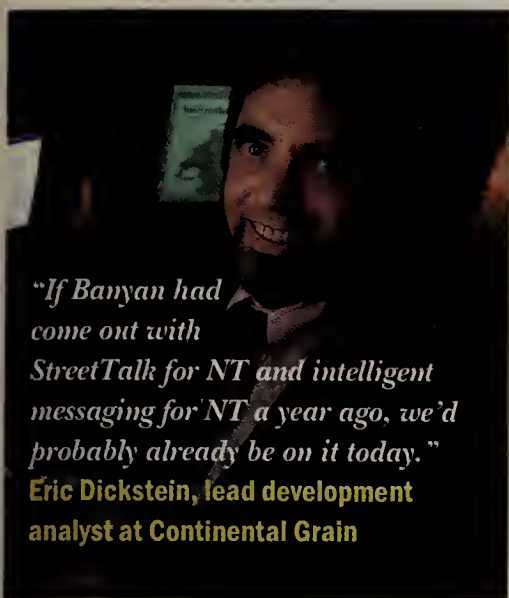
Fuchs' concerns underscore the role a vendor's product vision plays in the selection of a NOS.

Continental Grain has been a loyal VINES user since 1985, when the economics of LANs and PCs drove the user to Banyan. Today, VINES runs on more than 100 of Continental Grain's servers worldwide, serving 2,200 clients. "[It's] the lifeblood of the company," Fuchs says.

Although VINES 7.0 is not in production at Continental Grain, lead development analyst Eric Dickstein is ecstatic about several new features.

Foremost among them is a software key used to access services bundled into the NOS. Until now, Banyan would sell a customer the entire block of code but restrict access to nonlicensed services by using a hardware dongle.

"That means you had a hardware key on each of your servers," Dickstein says. Essentially, that amounts to a nuisance as well as a potential maintenance risk since



DANUTA OTINOWSKI

"If Banyan had come out with StreetTalk for NT and intelligent messaging for NT a year ago, we'd probably already be on it today."
Eric Dickstein, lead development analyst at Continental Grain

hardware keys can fail.

Continental Grain also anticipates improvements in file and print service performance, and gives the nod to native TCP/IP services now being bundled into the new release of code. Until now, with Banyan's proprietary IP stack, the commodities trading company was forced to load dual IP stacks into workstation memory. "Banyan would get its IP and our back-end Oracle server would run a TCP/IP stack on top of VINES," Dickstein says. Native IP support will reduce memory demands placed on client workstations.

"It boils down to a single stack, and that means less maintenance, which is important to us," Dickstein says.

On the directory services side, Continental Grain is pleased to see Banyan add support for long file names, especially since, long-term, the company is leaning toward Windows 95 and Windows NT as its client operating systems.

This type of upgrade continues to enable Banyan to outpace other NOS competitors, Dickstein says. He gives VINES StreetTalk directory service an A+, largely for its flexibility in setting up distributed directories.

"It's been field-proven for 10 years," Fuchs says. "NT still can't do directory services, and NDS may just be getting there. With every iteration of StreetTalk, people just go ho-hum. But it's the best thing out there."

StreetTalk allows you to define a user profile once, then apply it over and over again to other users, making only customized changes where necessary, he says. And StreetTalk has long supported a single system logon, a concept that Novell and others are just now embracing in their NOS directory products.

StreetTalk has "spoiled" the organization, Fuchs says, adding that a migration from VINES would be "a very difficult thing to do."

But it is under consideration, nonetheless. The company could swap out its VINES servers for NT Servers, a move that Fuchs stresses is only hypothetical at this stage. "It eventually will come down to performance, manageability and economics," he says.

One option Continental Grain is weighing is to migrate over the next 18 months or so to NT Server but layer an NT-friendly version of StreetTalk on top to

preserve the directory expertise the company has in-house.

"The real problem with NT Server has been the lack of a comprehensive directory service," Fuchs says. "We've heard too many stories about what it takes to emulate what we do with StreetTalk. That's not something we're up to."

On the messaging side, Dickstein says VINES' capabilities are more than adequate for a Banyan-only environment, but

the company needs a tool to integrate the five different E-mail systems in use across the organization.

The company is leaning toward standardizing on Lotus Notes, due largely to its intelligent messaging features.

"If Banyan had come out with StreetTalk for NT and intelligent messaging for NT a year ago, we'd probably already be on it today," Dickstein says. Those products provide a slick user interface for neo-

phyte users in remote offices, where training is scarce, he adds.

Moreover, Continental Grain is interested in Notes' ability to handle rich text that combines pictures and video clips, and supports embedded applets.

"It's very compelling to support another application in the content of a message, as opposed to sending data tied to a spreadsheet or some other program the recipient must launch," Fuchs says. ■

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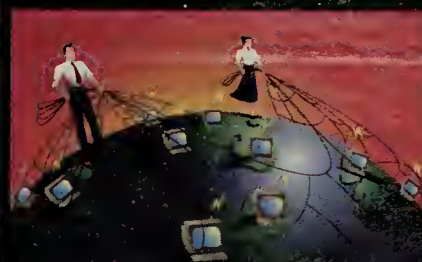
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Briefs

■ **Microsoft Corp.** will sponsor Internet and intranet developer conferences this fall.

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Site Builder Conference:
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■ **The Professional Developers Conference** will run Nov. 3-7 in Long Beach, Calif., and is designed for users that build distributed enterprise applications or customizable components for the Internet, intranets, LANs and WANs using C and C++ or Java. Attendees will learn about the next generation of distributed services Microsoft is building in to Windows and Windows NT.

Each conference costs \$1,195.
Professional Developers Conference: (800) 206-3000.

Fight the support inflation factor

By Douglas Welch

A funny thing happens when organizations adopt a customer service approach to handling internal end users' cries for help: Support staff sizes inflate, just the opposite of what was intended.

The theory is that if you would do as much to satisfy users' needs as you would to retain a customer, users would be a happier, more knowledgeable and productive lot. However, companies using this approach found that the more support users got, the more they wanted.

In fact, many of the support groups that adopted this user-as-customer approach are now spending more time holding users' hands than maintaining and expanding networks.

Sure, there will always be users who require hand-holding (see graphic). You just have to make sure they don't go from asking support staff to show them how to do something to demanding that it be done for them.

"Hand-holding is a part of support to an untrained but important user," says Mitch Kraton, president and founder of Digital Research. "But, to a user, this is a power thing because they won't be bothered with learning if they can get

someone else to do it for them."

Most support professionals agree that training is one step in solving this problem. And the training doesn't have to follow traditional classroom methods.

Instead, you can keep training casual and fun by holding lunchtime or after-hours training sessions that take on the air of informal get-togethers.

The use of alternative training, such as video and audio tapes, can also be effective because it lets users learn at their own pace and continuously review material they find difficult to grasp.

You can also produce tailor-made material that helps specific sets of users tackle frequently encountered problems.

"I use tailored but abbreviated documentation," says Neil Quateman, owner of Beyond Management, a computer consulting group in Los Angeles. "[The users are] not overwhelmed with a large manual and they know that what is contained in the document is specific to their needs."

In addition, the manner in which you provide support can also help reduce hand-holding.

"When my clients call to ask about questions we've covered in a prior training session, rather than simply giving them the

answers, I lead them to the answers," Quateman says. "For example, I'll ask them, 'Is this an editing function or a reporting function?' and then ask if they see an Edit or Report option in the menu structure. I'm hoping to give the users the tools necessary to think for themselves."

The big offenders

There are always those few users who either start off with a resistance to computers or develop one over time. These users are often the ones who tax your support staff the most. Here are a few examples:

- ▶ Employees who have never appreciated the intrusion of computers into their jobs and don't want to learn how to do things when someone else can tell them.
- ▶ New employees who don't have much computer experience and quickly get lost in the technology.
- ▶ Middle managers or executives who think using a computer is beneath their position and are lost when they must use one.

Of course, making sure new hires know their way around networks and client applications would also help.

"I definitely believe we could get by with a lot less effort if all users were required to have a minimum of proficiency using the basic business tools that most corporate IS pros recommend," says Sam Anderson, network manager for a major health care

provider. "This is sometimes difficult for HR to understand [when they hire]."

While most users understand the need for computer skills and training, there are always those who will find it easier to call the help desk than search the help system or open a manual.

"Adults, unlike children, don't have to learn," Kraton says. "They feel they got hired for who they already are and

what they already know. Learning requires a will and commitment. They must be given a compelling case for learning. They must have an emotional or economic buy-in to make the commitment to learn and therefore risk change. And they must have a payoff."

Reducing your support needs will require innovative thinking and, initially, even more work from you. But this extra effort will yield lower sup-

port needs down the road as you get more educated, knowledgeable and independent users.

Don't let hand-holding trap you in its vicious cycle. Now is the time to teach users to support themselves.

Welch is a computer consultant and freelance writer in Van Nuys, Calif. He can be reached at dewelch@earthlink.net.

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Back for a repeat performance is the two-day Comdex InFocus program, where IS and management executives can explore industry trends, directions and successful business strategies. New this year are the Technology Crossfire and Ask the Technical Experts sessions, where you can get knowledgeable answers to questions submitted by registrants and reviewed by Comdex technical advisers.

The full conference costs \$795. The cost for two days is \$595; one day is \$495. Comdex InFocus costs \$325.

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CONFERENCE: Computer Security

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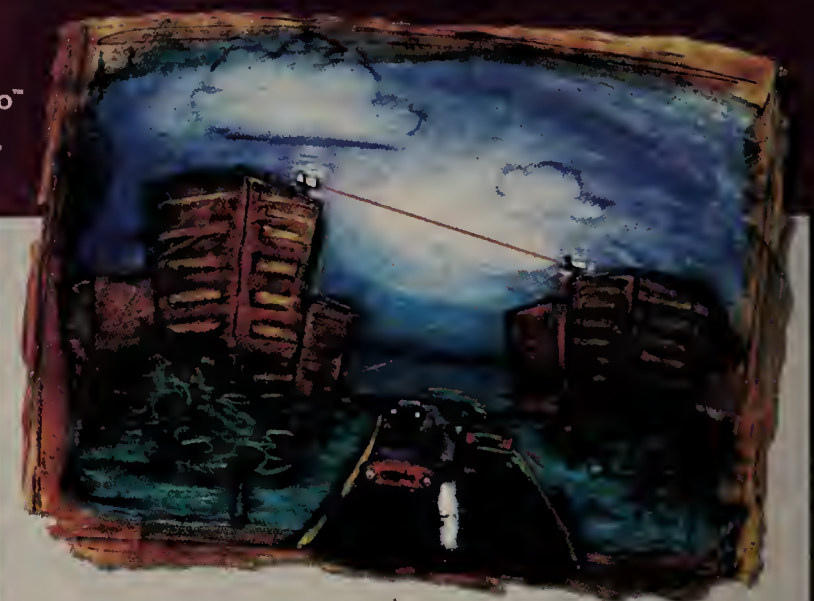
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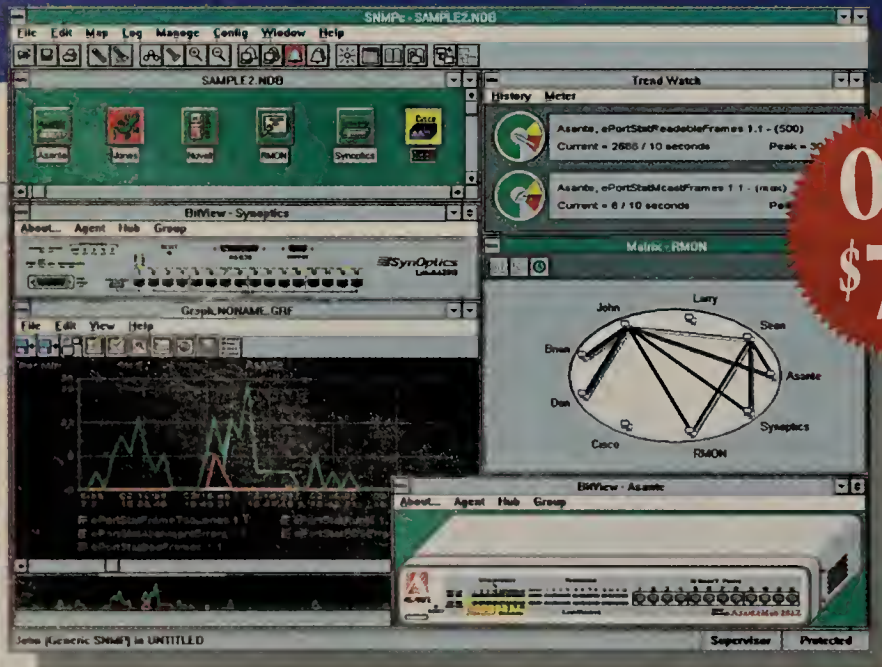
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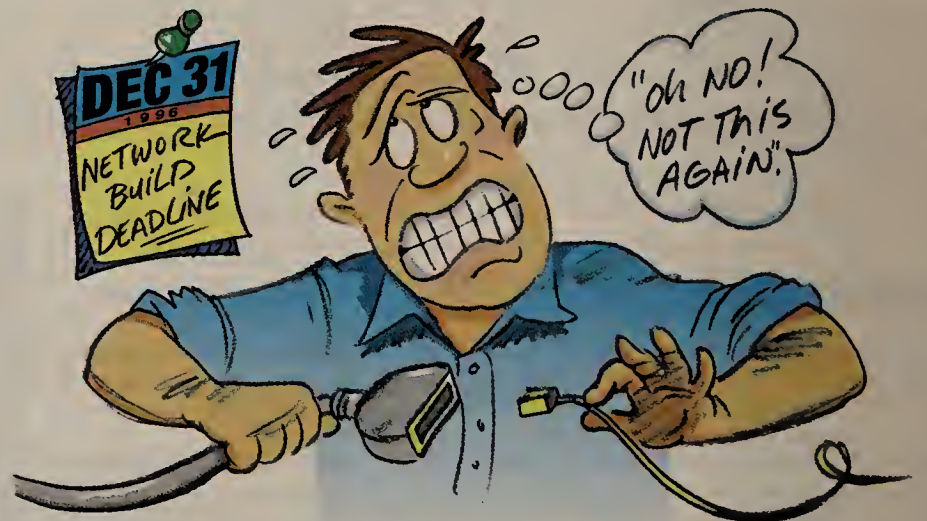
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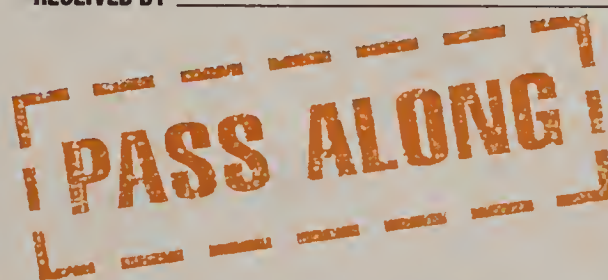
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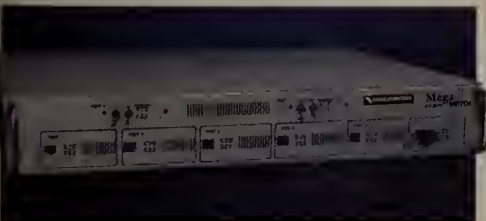
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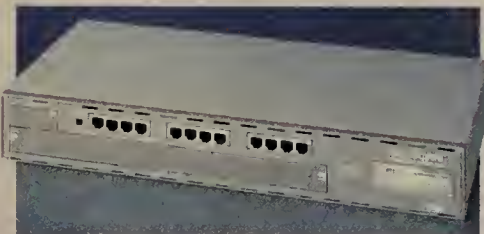
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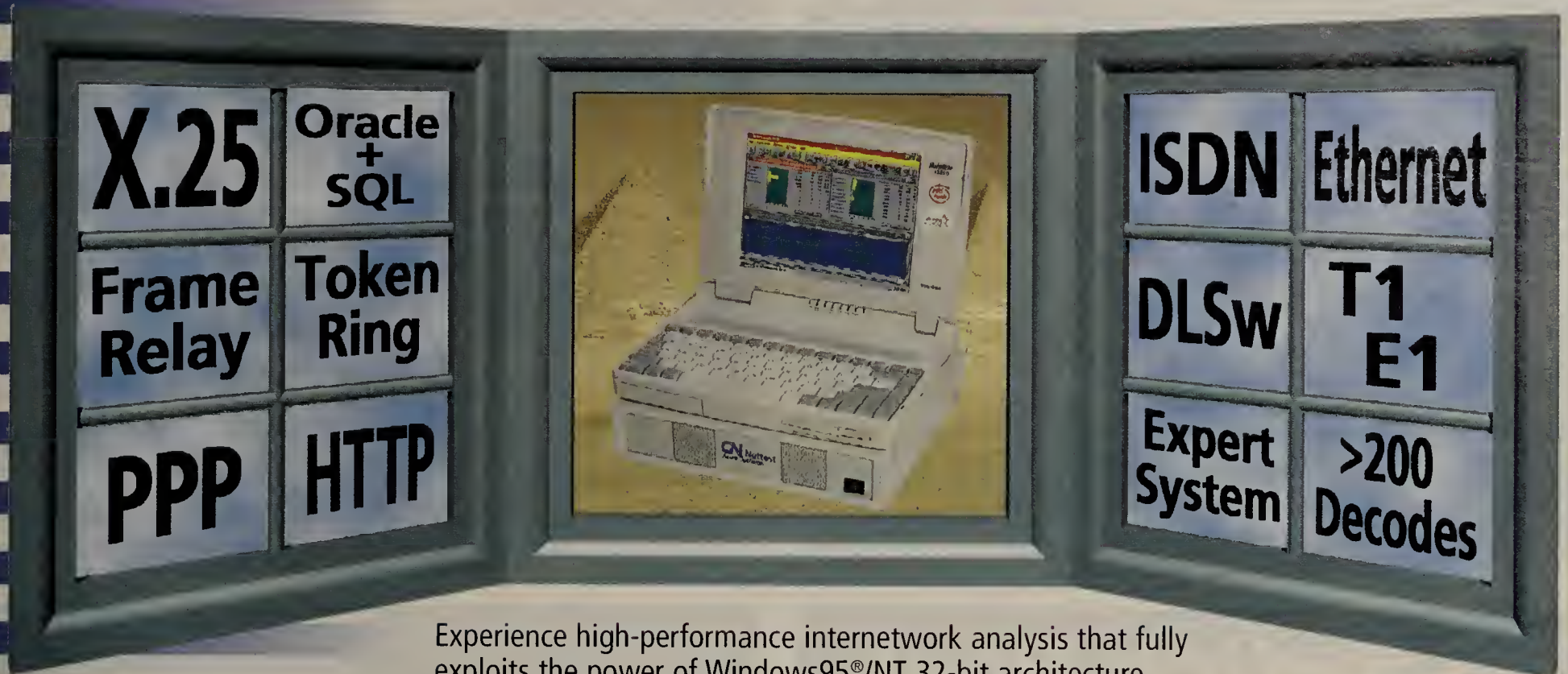
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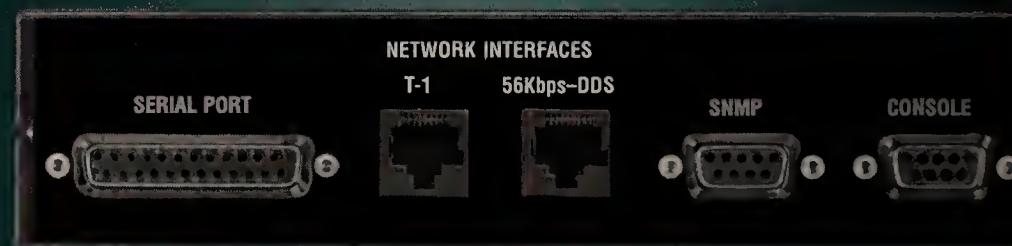
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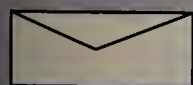


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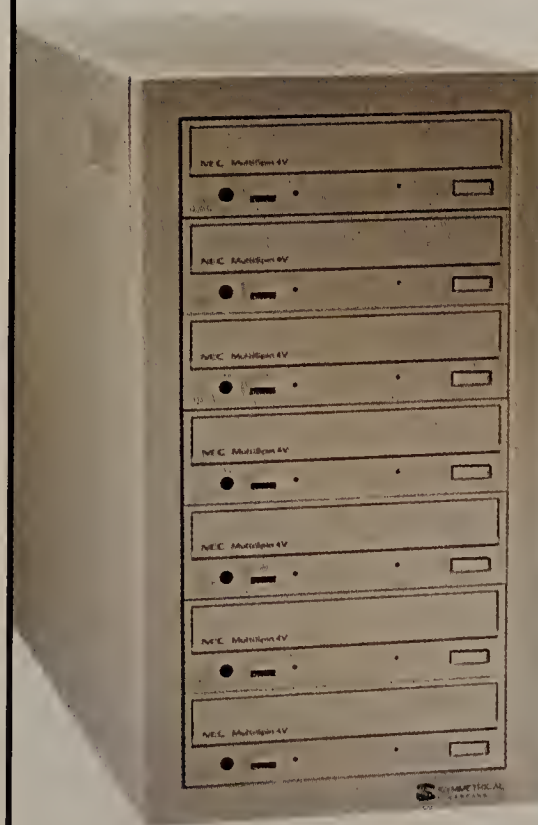


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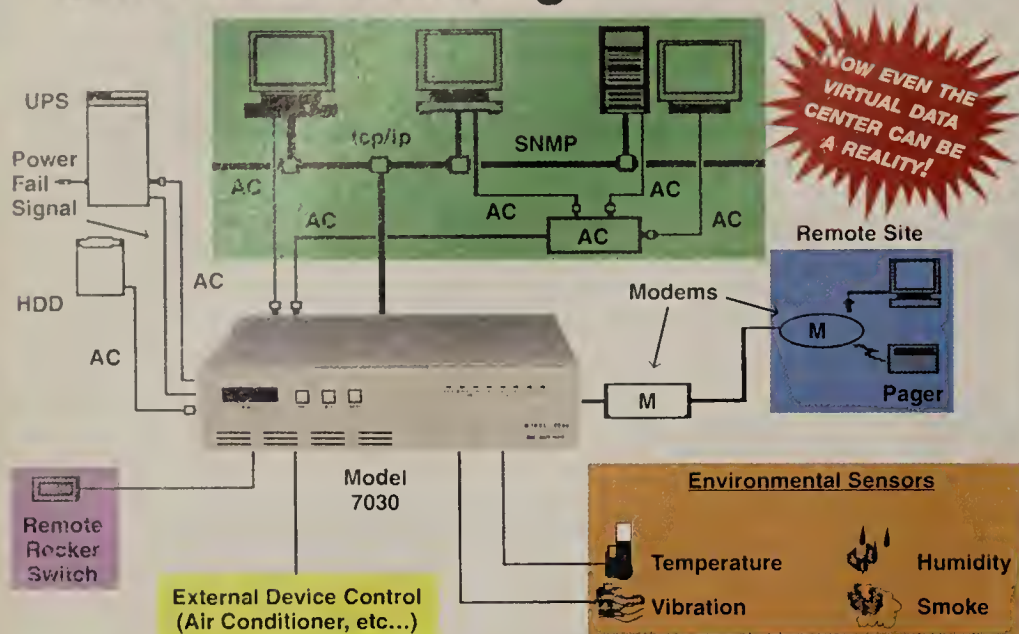
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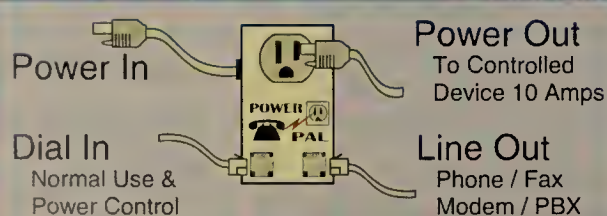
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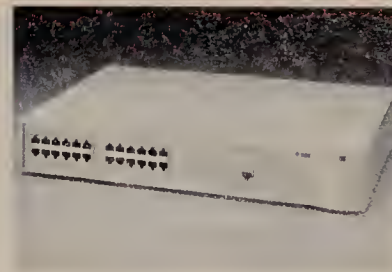


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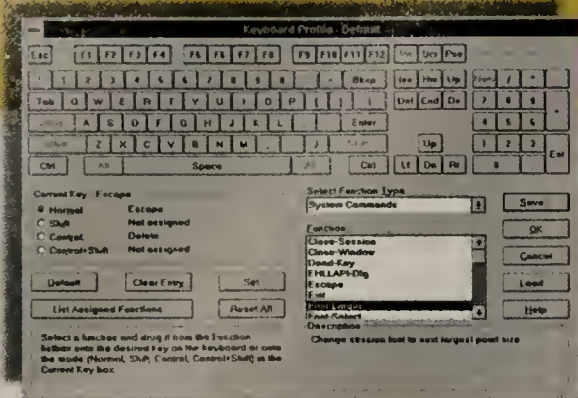
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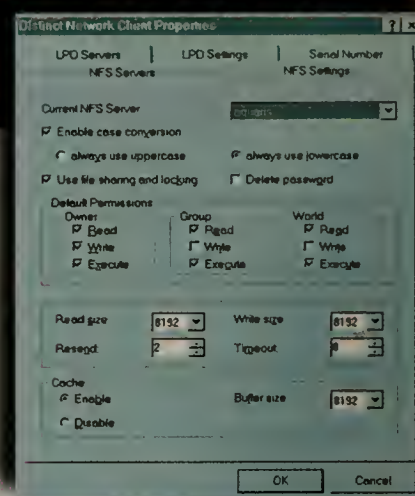
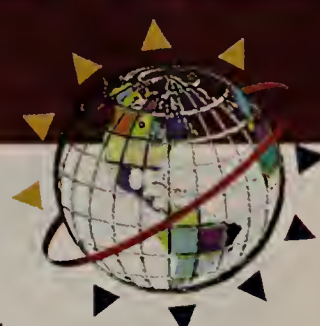
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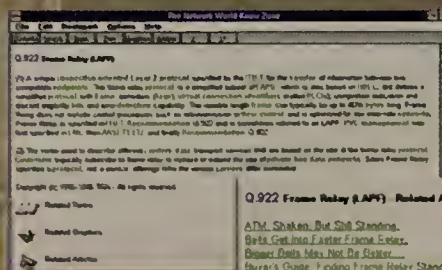
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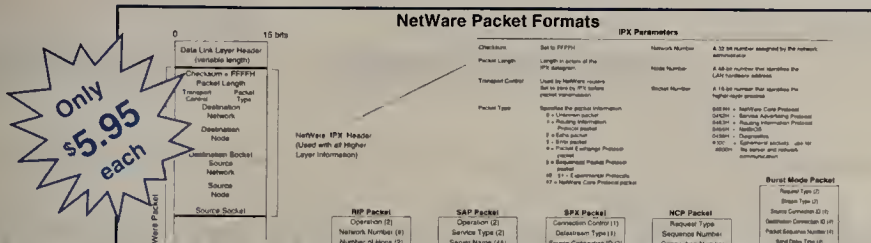
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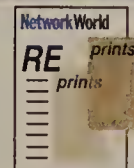
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ActiveX

Continued from page 1
try consortium.

The candidates were a mystery to most voters just five days before the Super Tuesday election. As late as last Thursday, Microsoft was busy overnighing detailed descriptions of the two proposals that it claimed to have crafted "after extensive consultation with customers and partners."

"It have would been nice to get the packet sooner," said one stakeholder who asked not to be identified.

Microsoft announced in late July that it would serve up its ActiveX core technologies — specifically, the Component Object Model (COM) and Distributed COM — to a standards body to promote the interoperability of ActiveX with other software and make it more pervasive on all platforms.

But the company did not say which standards body, other than to toss out as possibilities The Open Group, the Object Management Group (OMG), the Internet Engineering Task Force (IETF), the World-Wide Web Consortium (W3C) and a new group.

The Redmond, Wash., software maker insisted the vote

would be legitimate and the company had not stacked the deck to produce the result it wanted.

But as the meeting draws



closer, speculation has become rampant that The Open Group has the inside track, as word filters out that the group's board already has endorsed a proposal for assisting the ActiveX community.

"As a practical matter, what else is there? Forget OMG — there's too much history there. W3C and IETF, with all due respect, are just not relevant for this sort of work," said John Rymer, an industry analyst at Giga Information Group.

Others such as rival Netscape Communications Corp. do not quite see it that way.

"If they're going to use an existing consortia, they should use the Object Management

Group, which is the consortia of record for objects and object technology," said Netscape standards strategist Carl Cargill, who was angered that OMG chief executive officer and President Chris Stone was not invited to the meeting.

Stone was not surprised that he did not get a formal invitation. "My feeling all along has been that they're trying to directly compete with OMG. Period. Remember, he who owns the infrastructure controls the market. And Microsoft wants the only Internet," Stone said.

But others agreed that The Open Group — and a new subgroup dubbed the Active Group — are good fits for Microsoft and its technologies. Microsoft has written its own implementations of key parts of the OSF's Distributed Computing Environment.

In any event, users reacted positively about the benefits of an industry-standard ActiveX/COM. "The biggest thing we need is to get a reference implementation of ActiveX and make this available to be licensed, used and supported by vendors on [non-Microsoft] platforms," said one corporate customer who asked not to be named. ■

Oracle

Continued from page 1

Although not included in the company's announcement, other plans include:

■ Easing the replacement of terminals by adding software to its Network Computer (NC) that translates mainframe-style data into HTML format.

■ Building Java-based productivity applications — word processing, spreadsheet and graphics — that will come standard on Oracle-designed Network Computers.

The flurry of activity is a real change for the database giant. Oracle has few built-from-scratch Internet products and a paltry share of the market, even though it is at the center of the industry debate over future standards.

At least in theory, NCA could be used by Microsoft's ActiveX components and Distributed Common Object Model (DCOM) protocol, as well as by Netscape's Java-based components and the Internet Inter-ORB Protocol (IIOP).

IIOP is part of the Object Management Group's Common Object Request Broker Architecture. Components based on

either object model will have a cartridge that sends ICX messages to cartridges on Web, application and database servers.

"The cartridges are components that support certain core services that Oracle is defining, such as [object] activation, security and robustness," said John Rymer, a vice president of research at Giga Information Group in Cambridge, Mass.

Initially, Oracle will supply a group of cartridges and announce pledges from third-party software and tool vendors to build more of them.

Such support is critical to NCA's success.

"The cartridge architecture is relatively straightforward [to implement]," said Barry Johnson, president of Dynamic Information Systems LLC, a client/server integration firm that is writing the Oracle WebServer training manual to be published by Oracle Press.

NCA will let developers assemble Web solutions quickly, Johnson said. HTML developers could create Web screens, then use a client cartridge to make an ICX call to a credit card authorization cartridge on the Oracle WebServer.

This latter cartridge would

handle communications with the remote authorization service and, if needed, other cartridges to access data on a networked Oracle database.

The architecture could give Oracle's promotion of the NC — a low-cost device with Web browser and built-in software applications — new credibility for corporate users.

"What's become a real issue for us is the cost of keeping up with the Windows/Intel platforms," said Peter Palmisano, chief information officer at environmental consulting firm Camp Dresser McKee, Inc., which is also in Cambridge. "Migrating our installed base from DOS and Windows 3.1 to Windows 95 and NT is the biggest capital cost we've ever faced."

In theory, Palmisano said, the lightweight NC — integrated via NCA with the Web and legacy data — could sharply reduce such costs. It also could lower the equally onerous costs of installing and maintaining PC applications and training end users, he said.

IDG News Service and Computer-World Denmark contributed to this report.

IBM

Continued from page 1

nents are backbone switching and related services, such as bandwidth reservation and congestion control.

IBM officials acknowledged that the company will make the announcement, but declined to offer details.

The announcement is expected to include a low-end access device that combines routing, switching, ATM LAN emulation and other communications features. The box, dubbed a RouteSwitch, is positioned as a multiprotocol, multi-function access device, allowing for the concentration of remote SNA and LAN traffic that would then be passed on to a larger switch.

Sources said this box is a smaller version of the oft-rumored but never materialized Nways Model 200 hybrid router/switch (NW, Jan. 22, page 1). IBM executives at the recent NetWorld+Interop 96 show in Atlanta confirmed the Model 200 had "evolved into a small access box."

The company also plans to announce a frame relay concentrator that would let users link multiple frame relay access devices over a single line to a larger frame relay switch.

"IBM is announcing the coexistence technology that links today's remote networks with future switched backbones," said Frank Dzubeck, president of the Communications Network Architects, Inc. consultancy in Washington, D.C. "Strong access devices are what IBM needs to fill in some of the holes in SVN."

IBM will also unveil its 8274/8273 LAN RouteSwitches, which are the devices it is reselling from Xylan Corp. The boxes will support existing Xylan technology such as Ethernet-to-ATM, FDDI and Fast Ethernet switching, but IBM will announce some new features of its own. These will include token-ring switching modules, ATM switching support, DS-3 speed wide-area switching modules and universal adapter connectivity for linking with large IBM or non-IBM switches.

The 8273/8274 devices will also be outfitted with IBM's Multiprotocol Switch Server (MSS) technology. MSS controls the routing and bridging functions of devices at the edge of an ATM net as well as provides traffic control and congestion management of backbone switching components.

By supporting MSS, the

devices will be able to more effectively control traffic from the edge of the network all the way to the backbone switch. IBM's Nways switches are also slated to support MSS in the future.

The 8273/8274 boxes are available now, but the new features will not be available until next year.

The upcoming announcement will also include:

■ A new 8272 Token Ring switch that supports source route bridging (SRB). The current 8272 switch does not support SRB.

■ TME 10 applications for managing the MSS environment.

■ A higher speed ATM backplane and improved fault-tolerance support for the 8260 hub.

■ 25M bit/sec, 100M bit/sec and 155M bit/sec ATM adapter support for Windows 95 and NetWare clients. The adapters include token-ring and Ethernet ATM Forum-compliant LAN Emulation or classical IP.

■ Support for ISDN and X.25 as well as a seven-fold increase in the number of voice lines supported in the current Nways Model 300 and 500 switches. ■

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Sybase

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down pat for the company that practically invented the term client/server. They have seen Sybase's future, and it is the Internet.

"We see the Internet as an extension of client/server computing," Kertzman said. "The future for both is multitiered, distributed, object applications. We're investing heavily in that."

What went wrong?

Something had to change for Sybase. The company has seen its revenue growth stall, its stock price plummet from more than \$50 two years ago to less than \$20 today; and this year alone, it has lost \$27 million and laid off 10% of its workforce. Just a few years back, the company was boasting 60% annual growth while the rest of the industry was growing at half that rate.

What went wrong? Plenty, according to more than two dozen current and former employees, industry analysts and customers interviewed for this article. They drew a picture of a company that:

- Squandered its reputation for technical prowess by delivering a badly flawed version of its flagship database, SQL Server 10.

- Wasted time and money on a slew of costly software development projects that never became

products.

- Drained resources by making too many acquisitions and then having to integrate those product lines.

- Gave the source code for its database to Microsoft Corp., in effect launching its own worst enemy in the low-end server market when Windows NT sales caught fire.

But solid assets, as well as a loyal customer base, remain. The latest version of the flagship database, SQL Server 11, is scoring well with customers for its quality and ability to run on multiprocessor computers. The company's middleware, consulting and Powersoft tools businesses continue to grow.

Still, Kertzman and Litwack realize they need to learn from Sybase's history so they do not make the same mistakes in moving the company forward.

A strong starter

Founded in 1984, Sybase shipped the first version of SQL Server three years later. Co-founder Bob Epstein's technical innovations created a fast, powerful database that could be accessed from programs running on desktop computers connected to a network — a client/server database.

As CEO, Mark Hoffman favored creating a strong team of managers to which he delegated great authority. It was a flexible

structure that adapted well to fast growth — at least for a while. The successful campaigns overseen by former marketing chief Stu Schuster are still admired today.

But Sybase began to rest on its laurels. For instance, until SQL Server 11, very few important changes were made to the original database engine, according to sources. "The only major improvement was the rewriting of the engine to run in a [symmetric multiprocessing] system. Everything else was just noise," one source said.

The company did not create the organizational and quality assurance changes needed to stabilize SQL Server 10 and to support ongoing improvements. It got to the point where Sybase was testing 30% to 40% of code for that new version rather than at least 70% to 80%, according to a former Sybase manager.

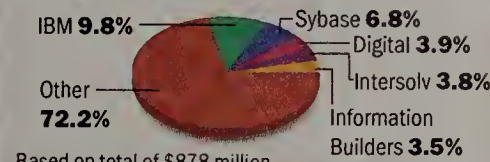
Serious software bugs began appearing shortly after Version 10 was released, and efforts to fix the problems became confused and unfocused. By the summer of 1994, the bugs and the continued inability of the database to run on more than a four-proces-

sor computer, were the subject of scathing and highly public criticism.

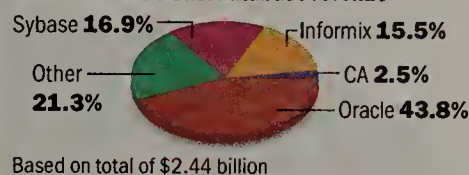
Also during this period, Sybase had been funding a wide range of research and development projects, many of which ultimately were a drain on money, talent and attention.

SYBASE IN A SECOND

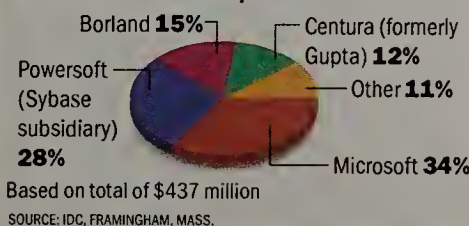
1995 worldwide middleware revenue



1995 worldwide Unix database revenue



1995 worldwide development tools revenue



"We invested in object-relational technology [the Brahms project], application development tools and data warehousing," said one former executive who requested anonymity. "All had very limited returns."

Other resources were con-

sumed trying to digest a spate of acquired companies and technologies, nine in all.

Betsy Burton, a former Sybase employee who is now a Gartner Group, Inc. analyst, judges that about half of these acquisitions added little, if any, value.

Among the worst deals was Sybase's \$61 million buyout of Gain Technology, Inc., a tiny start-up with a tool set for building multimedia applications. Sybase tried to create an entire tools product line around Gain, but finally gave up.

Kertzman is now counting on the acquisitions that did work out well — Powersoft and Micro Decisionware, Inc., for example — to reenergize Sybase's technology innovation.

Sybase has also recently created a partnership program aimed at application vendors and value-added resellers, a fast-growing market Sybase has missed.

"We didn't respond well to the technical requirements of companies like PeopleSoft [Corp.] and SAP [AG]," Schuster said. "The market matured quickly from customers building applications, to buying packaged ones and then figuring out what database to use. Where those applications were implemented, Sybase could not be a player."

Despite that, SQL Server 11 is winning converts. "The applications we have on SQL Server 4.9, we're trying to deploy as fast as possible on [SQL Server] 11," said William Niemi, technology consulting director at Fidelity Investments, Inc. in Boston. "For the most part, it's pretty solid and the performance is significant."

The man credited with seeing SQL Server 11 through is Dennis McEvoy, who whipped the engineering group into shape upon coming to Sybase. But earlier this month, McEvoy left Sybase for document management software vendor Verity, Inc.

Litwack, who took over for McEvoy, is widely respected for his technical, managerial and business expertise. He is reorganizing the server and middleware groups as business units to force them to see their respective products from the customer viewpoint.

"The company has great database and middleware products," according to Don DePalma, senior analyst at Forrester Research, Inc. in Cambridge, Mass. "But they have to help users justify future investments, by showing they're an innovative competitor, especially in Internet computing." ■

Kertzman: The message is distributed computing

Mitchell Kertzman, Sybase, Inc.'s new president and chief executive officer, recently spoke with *Network World* Senior Editor John Cox about the database company's past mistakes and the challenges ahead.

What went wrong at Sybase?

The real issue of what went wrong was arrogance. Instead of thinking, 'They bought from us for our technology,' we thought, 'they bought from us because of who we are or because we're good salespeople.' That may be a harsh assessment, but we have to acknowledge that. Then there was a release of the core server, SQL Server 10, that was generally acknowledged to be not up to past standards. That allowed Oracle [Corp.] and Informix [Software, Inc.] not only to catch up, but to change the technology playing field.

What about the criticisms that the SQL Server architecture is limited?

What we've done with SQL Server Release 11 has shown that the architecture could do much more than it had ever done

before. Release 11 has been a great success.

So how are you earning your paycheck?

First, getting us to focus on the core mission of Sybase and its customers. So we're getting out of the interactive TV business. Second, creating the message. Sybase has not had a clearly articulated message to the marketplace for a couple of years now. Third, execution — the day-to-day work of selling and supporting our customers.

What is the message?

Sybase forgot what we're all about — distributed computing. Oracle and Informix are focused on the recentralization of computing. That's the first major step backward in the industry. We're going to focus on distributed computing. It's been viewed as costly and complex. We're going to reduce both of those.

How?

One key technology is [data] replication, and we have the leading technology. We also have a strong focus on the middle layer — the application server layer. The

future for client/server and the 'Net is multitiered, distributed, object applications, where the application logic is in application servers, not in the client or the database.

But Sybase has a weak record in object-oriented technology.

Our research shows that adding the complexity of objects into the [relational] database so one engine can do all things will compromise transaction performance. Second, that approach leads further down the road of recentralizing the database, of dragging more of the code into this 'universal server.'

If you put it there, it's less scalable and reusable than it would be in the application server layer. A set of common APIs [will] let you store objects separately from relational data. Right now, everyone's object-relational database is [slideware].

Read the complete transcript of our interview with Mitchell Kertzman. Enter the number to the right in the DocFinder box on the home page.

9020

Network World

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The horror of Interop and the discovery of a new type of GPF

I promised to relate the horror of NetWorld+Interop, and being a man of my word, here goes: Held Sept. 17 to 20 in Atlanta, it was an aesthetic nightmare. Without doubt, the show has never been so big, so unremittingly and vulgarly commercial, or so mind-numbingly noisy. And when I say noisy, I mean professional wrestling, screaming-for-blood-or-at-least-mutilation-level noise.

For example, there was some booth around the end of the West Hall that periodically erupted into the kind of wild screaming I suspect accompanied beheadings during the French Revolution. (If you know the company responsible, let me know.) Perhaps they were giving away key chains (people at shows get excited by the darndest things).

But what really blew me away (man) was the incredible silliness of the whole event. Everywhere you turned, there were jugglers, magicians doing card tricks and imitators. (I saw a quite good Groucho Marx look-alike, but his script was painful.)

And worst of all were the pitchpersons. This is a form of life we can only hope follows a Darwinian trail to extinction as soon as possible, although I, for one, would be in favor of wholesale slaughter and to hell with the ecological consequences, which would probably be negligible anyway.

Pitchpersons are those almost human "things" that attempt to do a mass sell to the audiences inexplicably gathering around booths. Their scripts often sound computer-generated, as if a large database of PR-speak had been mixed with an even larger collection of phrases from unctuous televangelists and obnoxious game show hosts, was then sprinkled with the product names and dumped into the void that serves as the head of the pitchperson. But I digress.

The thing that I discovered observing all of this was a new problem for the computer industry to wrestle with: GPFs. Nope, not General Protection Faults — General PR Foul-ups. I mean, at an event such as Interop, you have the most important people in the IT industry trying to figure out where they're going to spend their budgets — slim though they may be (the budgets, not the people).

Obnoxious pitchpersons delivered carefully scripted phrases similar to those of televangelists.

And in response, the vendors and their PR "experts" decide to put forward pimps, fools and comic singers. Am I missing something?

But this is more or less the way of the evolution of most trade shows. A show starts out with a motley collection of vendors that represent the core of an emerging market. They all take 10-by-10 or 10-by-20 booths, and the attendees get to spend two or three days talking to the core of the market. A blast is had by all concerned.

Both shows were exactly that when they started some 10 years ago. Then they merged to create an uncontrollable monster. The Godzilla of the trade show world. Now I suspect the heyday of

Interop has passed, and within at most (roll up, roll up,

place your bets) four more shows, it will die off. What will survive will be what was the most interesting part of this show: Interop DotCom, a showcase for vendors of Internet-related products.

Sadly, the organizers chose to site this, the second Interop DotCom, at the far end of the East Hall, which was fine as long as you happened to be wearing stout hiking boots, have a good supply of water and were accompanied by a team of very fit Sherpas.

But, gee willikers (I have always wanted to use that in writing), it was worth the trek. Although I had very little free time, what I did see of Interop DotCom was exciting. This is the kind of event where the edge of the industry can be found.

So another Interop, another Atlanta and another show under our collective belts. And the horror of Interop? That's behind us until we see the next round of GPFs at Interop in Las Vegas next spring.

Tell me about your Interop horrors electronically at mgibbs@gibbs.com, or lay it on me vocally at (800) 622-1108, Ext. 504.



Mark Gibbs

Finally, there is hope for taming the wild network PC

What irony: Intel Corp., the world's largest maker of PC processors, has launched an effort to control the skyrocketing cost of managing computers built with its own chips. PCs were once the solution for cutting information-processing expenses; now they are the problem.

The rising price tag is a major concern for network and IS managers. A new study by Gartner Group, Inc. says it costs \$39,000 to own and maintain a networked, Windows 3.X PC over a three-year period.

That is a lot of money. It's like paying \$200,000 over three years

on gasoline, insurance and maintenance for a \$20,000 car. No one in their right mind would pay expenses like that.

Yet with PCs, few think twice. Vendors such as Intel see this as an opportunity. Intel launched its Wired for Management initiative last week, aiming to let users cut the operating costs of networked PCs up to 15% during the next year.

Desktop management vendors want to be key players in the enterprise systems management area.

To do that, Intel will beef up its desktop management products. Intel sold about \$75 million of these tools last year, leading the worldwide \$215 million market with a 35% share, according to International Data Corp. Symantec Corp.'s share was 23%, and McAfee had 20%.

The most interesting aspect of this new initiative is an alliance with Tivoli Systems, Inc. Intel and its desktop management competitors want to be known as players in the enterprise systems management arena.

Systems management is still a bit foreign to many network managers. Network and fault management are old hat. But these are just part of the bigger systems management picture, which comprised a global market of \$6.7 billion last year, according to Paul Mason an analyst at IDC.

Other enterprise systems management elements include storage management, software distribution and configuration tools, all of which can help cut costs and make life easier. Just ask your friends who run the mainframe.

NetWare- and Windows NT-centric management leaders like Intel, Symantec and McAfee have enterprise envy. They know the Big Boy's Club requires being able to work with Unix-based systems management systems.

Such integration is good because it's easier to manage an operation from one console rather than a dozen. But from the desktop management product perspective, what does your money buy? In Intel's case, not much for now.

The Tivoli alliance won't produce application program interfaces until November. Third-party products will appear in the second half of 1997.

Vendors may want to create out-of-the-box management solutions, but first they have to put something into the box.

The most tangible shrink-wrapped desktop/enterprise systems management product appears to be McAfee

Enterprise (ME), announced two weeks ago at NetWorld+Interop. Eight of ME's 11 modules are shipping now, with Unix integration due by year-end.

ME runs on a Windows NT console, which integrates systems management data from NT, NetWare and Unix LANs. The console provides drag-and-drop systems management with common reporting and messaging.

McAfee's partners include Network General Corp., which feeds Sniffer data into ME's console; BMC Software, Inc., which will feed alerts and application data from Patrol into ME's console; Hewlett-Packard Co., which will accept ME's data into Open View; Seagate Enterprise Management Software, which will merge NT Backup Exec into ME; and Tivoli.

This software will allow network and IS managers to integrate PCs with other systems management applications. Such tools will let them automate more tasks and manage more PCs. Best of all, cost of PC ownership will take a big dive. Who knows, maybe that will help Intel sell more PC processors.

Buerger is a networking industry consultant and writer in Atlanta. He can be reached at dave@buerger.com.



Dave Buerger


Okay, so
you're a Token Ring kinda person. In fact you
love it. Gotta admit, the network's always been there when
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Do you plan to retire two years from now?

Funny, that's what Cisco seems to think.

The reality is you're going to be on the job for a while. But can the same be said of a Cisco switch or router? Look at the history of some of Cisco's products (LightStream 100 and 2020, IGS, AGS+...) and you'll see a pattern of discontinuations, product overlaps and a general lack of integration. Maybe it's us, but we don't think it makes sense to invest in a network that has the potential of becoming obsolete or outdated every couple of years. You could very well end up fishing for an entirely new solution or, worse, another employer.

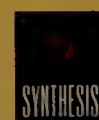
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